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PERSONAL CONSTRUCT SIMILARITY AND FRIENDSHIP

Michael John Gregson

Bedford College

Thesis submitted for the degree of Ph.D.

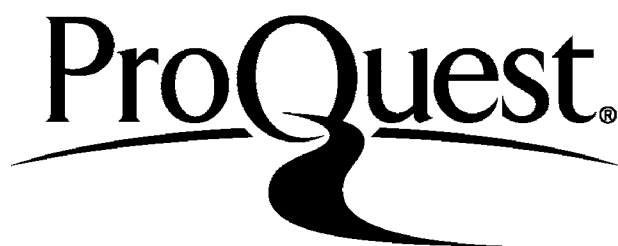
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ABSTRACT

Two sets of literature are reviewed: firstly, a detailed review is given of ideas and indices derived from Kelly's Personal Construct Theory and of their use in research on interpersonal relationships and secondly, a more selective review of the interpersonal attraction literature is presented. Duck's (1973; 1977) filter model of friendship, which forms the focus of this research, is then discussed.

Five studies are reported. All were concerned with the relationship between friendship and similarity of personal construct content. The positions, within the proposed filter sequence, of similarity of personal construct organisation and structure, were also of primary interest. Other concerns were to investigate the relative importance in friendship of construct similarity, attitude and value similarity, and the meaningfulness of others' constructs; to compare superordinate and subordinate construct similarity; to assess the effects of using different measures of content similarity; and to investigate sex and age differences.

Friends were generally found to be relatively similar in terms of construct content, organisation and structure but their constructs were not more meaningful and nor was there any evidence of friends having similar attitudes or values. It is suggested, on the basis of the findings relating construct content similarity to friendship, that the strength and nature of this relationship depends on the nature of the group e.g. on its homogeneity and centrality in the lives of its members. Superordinate similarity was found to be more strongly associated with established friendship than subordinate similarity. Some sex differences were found e.g. in the type of content similarity associated with friendship.

The last chapter discusses the problems of specifying the filter sequence, the filter model from a Kellian perspective, and the importance of the social context of relationships. Suggestions for future research are made which emphasise the need to tap people's constructs of relationships.

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REVIEW OF THE LITERATURE

CHAPTER ONE

KELLY'S THEORY OF PERSONAL CONSTRUCTS

The aim of this chapter is to provide a brief and selective introduction to Kelly's theory. Summaries of the theory have been presented by Kelly (1970), Bannister and Mair (1968) and Bannister and Fransella (1971) among others and the present review will draw on these sources as well as the original statement of the theory made by Kelly (1955).

Basic Assumptions

Kelly coined the phrase 'constructive alternativism' to characterise the philosophical position which underlies his theory. Assuming that although the universe is real man can have no direct knowledge of it, Kelly suggests that in representing his environment the individual is free to place any number of alternative constructions (or interpretations) on it. Thus 'the universe is real, but it is not inexorable unless ... (one) ... chooses to construe it that way.' This is not to argue that some constructions are not more useful than others, but rather serves to stress that even our most successful and cherished constructions of events are open to revision and replacement. It is this sort of 'psychological reconstruction' which is at the core of Kelly's approach; as a psychotherapist his major task was that of enabling clients to change in one way or another.

A key aspect of Kelly's position hinted at in the above, is that of reflexivity. Unlike the natural sciences which do not need to provide an account of the activity of the scientist within their theoretical structure, a good psychological theory should, according to Kelly, be able to account for the activities of the psychologist as well as those of the persons under study. While it may be doubted as to whether Kelly solved the problem of reflexivity in his theory (e.g. Mischel 1964; Hinkle 1970), his attempted solution was both simple and thought-provoking. The construction of man which Kelly chose to adopt was explicitly selected in order to dignify the subjects of psychological theories by viewing them in the same way that psychologists viewed themselves.

'Scientists are men, and, while it does not follow that men are scientists, it is quite appropriate to ask if it is not their human character that makes scientists what they are'.

(Kelly 1970, p.8)

While not the only construction possible Kelly has chosen as his model of man that of 'man-the-scientist'; the usefulness of such a model to be determined partly by the success of the theory to which it gives rise. Like the scientist then, man is seen as attempting to understand the world in which he lives; he does this by setting up, representational models of the world which are retained, revised or rejected according to the degree to which they enable him to accurately anticipate future events. Further, man is viewed as essentially in movement, he is no inert object which is sometimes prodded into action by his 'needs', for example. To exist is to act. What does need to be explained is the direction that the individual will take and this, Kelly suggests, is best understood in terms of each person attempting

to increase his understanding of his world. Just as the scientist chooses that theory which seems to best represent reality thus enabling more accurate prediction and increased control, so the individual man 'moves in the direction of increased meaning in his own individual terms' (Bannister and Mair 1968, p.11).

The Theory

Believing that generality was a key characteristic of a good psychological theory, Kelly set out his theoretical proposals in an abstract and formal manner. A fundamental postulate, in which Kelly sets out his basic position, is supplemented by eleven corollaries in which the implications of the fundamental postulate are explored. The formal structure of the theory will not be presented here, though particularly relevant selections will be made.

Kelly's proposal as the Fundamental Postulate of his theory was that

'a person's processes are psychologically channelized by the ways in which he anticipates events.'

In this postulate Kelly stresses that people in motion are the subjects of his theory which is psychological in nature. Other ways of viewing man are possible but since they are not necessarily closer to reality, psychological accounts of man need not be reducible to, say, physiological accounts which are themselves 'based on man-made constructions'. (Kelly 1970, p.9). Perhaps most importantly Kelly stresses that men are directed towards the future; it is greater anticipation, more accurate prediction, increased understanding which is sought - ⁵part events are not regarded as basic determinants of an

individual's course of action, even though he himself may construe himself as limited and bound by his past.

Thus 'man is a form of perpetual motion with the direction of the motion controlled by the ways in which events are anticipated' (Bannister and Mair 1968, p.13). The eleven corollaries to the Fundamental Postulate explore how such anticipation takes place. Basically a person anticipates events in terms of his personal constructs, which are structures he erects in order to 'phrase his experience'. Since events never repeat themselves exactly people structure their experience by detecting 'recurrent themes' i.e. by noting similarities, and also by noting contrasts, for

'a construct which implied similarity without contrast would represent just as much of a chaotic undifferentiated homogeneity as a construct which implied contrast without similarity would represent a chaotic particularized heterogeneity'

(Kelly 1955, p.51).

A construct then is some way in which some things are interpreted as being alike and at the same time different from other things. It is therefore dichotomous.

Each individual develops his own unique set of constructs which form the basis of the anticipations he makes, but these constructs are not independent, rather the individual sets up his own hierarchical system of constructs, in which some constructs are therefore more important than others. Predictions involve lines of inference drawn from one construct to another, and it is only through the development of a personal construct system that the future may be anticipated. The system itself is of course open to revision dependant upon the fate of the predictions made by the person.

Each individual constructs then a hierarchical system consisting of a finite number of dichotomous personal constructs which he uses in order to anticipate future events. Each of these personal constructs 'is convenient for the anticipation of a finite range of events only' i.e. there are certain events which an individual would not construe in terms of particular constructs e.g. for most of us the construct 'shy-outgoing' is more usefully applied to the owner of a chair than to the chair itself. Each construct has a focus of convenience which is the set of events to which it can most usefully be applied, and a range of convenience which is a broader set of events to which the construct can be applied, albeit less usefully. The same is true of construct systems. Thus for example personal construct theory (which is itself a personal construct system) has psychotherapy as its 'focus of convenience' but can be applied to many other areas of psychology (it's range of convenience). Further within any individuals construct system there may exist different sub-systems, each with their own focus and range of convenience.

Earlier it was stated that, for Kelly, the fact of man's motion was not a problem; rather he emphasised that it is the direction the motion takes which is problematic. The corollary which deals with this is the Choice Corollary which states (1970 version) that 'a person chooses for himself that alternative in a dichotomized construct through which he anticipates the greater possibility for the elaboration of his system'. There is a 'continuing movement towards the anticipation of events' (Kelly 1955, p.68), which may take the form of either clearer definition of the system, thus attempting 'to become more and more certain about fewer and fewer things' (Kelly 1955, p.67), or of extension of the system thus broadening the predictive

range of the system leading to a vague awareness of 'more and more things on the misty horizon'. Whether or not an individual makes a choice which will lead to the extension or definition of his system will depend upon his awareness of the possibilities involved, of the alternative constructions available.

Change in the system is also governed by the validity of the predictions which the person's constructs lead him to make. If the individual construes his predictions as being inaccurate then he may change his personal construct system in some way; perhaps by using different constructs to construe the events in question, or by altering the relationships between constructs e.g. the slightly prejudiced individual who finds that the prediction that another person who has a black skin, as opposed to a white skin, will be unintelligent rather than intelligent, does not enable him to anticipate events as well as he would like may therefore loosen the relationship between the two constructs, so that the colour of another's skin no longer has implications about his intelligence. Kelly assumes that personal construct systems are fluid and therefore that change is to be expected as the individual assesses the outcomes of his predictions. Learning is not therefore a special psychological process. However change can only take place within the system and therefore can only occur if the changes themselves can be construed in terms of higher-order 'superordinate' constructs. If these superordinate constructs are impermeable (i.e. cannot sumsume new elements) then the scope for change will be limited.

As stated above Kelly was mainly concerned with psychotherapy, a particular form of interpersonal relationships, and two of his corollaries deal directly with aspects of social relationships.

Firstly the Commonality Corollary, which underlines the fact that because construct systems are personal and idiosyncratic this does not mean that there are no similarities between people. It states that

'to the extent that one person employs a construction of experience which is similar to that employed by another, his processes are psychologically similar to those of the other person.'

(1970 version).

For Kelly then, the important question is whether two people have similar construct systems and not whether they have been through the 'same' experiences. However, even if such similarity existed between two individuals they might not be aware of it, and its existence does not therefore guarantee a harmonious relationship between the two individuals involved.

In the Sociality Corollary Kelly is concerned to point out that it is interpersonal understanding which forms the basis of successful social relationships. While, for many purposes, it is enough to construe another's behaviour in order to predict what he will do next (e.g. when walking in a crowded street), more intimate relationships demand that the other's constructions be construed:

'To the extent that one person construes the construction processes of another, he may play a role in a social process involving the other person.'

(Sociality Corollary)

For Kelly then the term 'role' had a particular meaning being 'a psychological process based upon the role player's construction of aspects of the construction systems of those with whom he attempts to join in a social enterprise' (Kelly 1955, p.97). Holland (1970) has

pointed out the tautology involved in the use of such a definition of role within the context of the Sociality Corollary, but while this implies that the corollary is untestable it does not necessarily mean that its usefulness in generating testable hypotheses is particularly limited. Indeed the focus of the present research follows from Duck (1973b) who suggested that the Commonality and Sociality corollaries may be blended to imply 'that the more one finds particular similarities with another particular person, the greater will be the understanding of his processes (because they are similar to one's own) and therefore the greater the ability to communicate in a comprehensible world' (p.25). Similar hypotheses have been put forward by Bender (1968), Landfield (1971), Thomas et al (1976) and Triandis (1959) among others. These studies will be discussed later; for the moment it is enough to emphasise again that for Kelly interpersonal understanding is the key to harmonious interpersonal relations. The existence of similar constructions may be an aid in this understanding, though in the kind of interpersonal relationship most studied by Kelly, that of therapist and client, too much similarity will usually cast doubts on the likely outcome of therapy (c.f. Landfield 1971).

The basic structure of Personal Construct Theory, as outlined above, was further amplified by Kelly to include discussion and definitions of different kinds of constructs (or different ways of constructing), and of such emotions as anxiety, guilt, threat and hostility in terms of personal constructs. For example Kelly defines a superordinate construct as 'one which includes another (i.e. a subordinate construct) as one of the elements in its context'. Anxiety is defined as 'the awareness that the events with which one is confronted lie outside the range of convenience of his construct system'

while 'threat' is the awareness of an imminent comprehensive change in one's core structures.' No further exposition of the theory will be undertaken here; relevant aspects of the theory not covered in this basic introduction will be considered at later stages of this review.

Holland (1970) has argued that Kelly's theory 'is not so much a set of assertions from which falsifiable implications can be drawn as a recommendation in general terms for the most fruitful way of regarding men (as scientists)' (p.128). Fransella (1978) has made a similar point in suggesting that Personal Construct Theory is a total psychology and not merely a theory. There are two levels at which this generality is exhibited. Firstly, at the metatheoretical level, Kelly's theory may be used to explain and understand varying theoretical approaches to psychology (and other disciplines) and the divergences between them. Secondly, at the theoretical level, Personal Construct Theory can be applied to a very wide range of the traditional 'areas of psychology, about many of which Kelly has very little to say (c.f. Bannister and Fransella 1971). In practice the development of personal construct 'mini-theories' has been restricted, and although the theory has had increasingly greater influence this has tended to consist of either the incorporation of Kellian ideas into more traditional approaches or of the use of personal construct methodology within a non-Kellian context (e.g. Slater 1976). Duck's (1977a; 1979) approach to interpersonal attraction is one of the few attempts to develop a Kellian theory in social psychology, though at times (e.g. 1976) the Kellian aspects of his approach tend to be submerged within a more traditional information processing perspective.

Partly because of the comprehensiveness of Personal Construct Theory and partly because the focus of this thesis is Duck's work and interpersonal relationships no overall evaluation of Kelly's theory will be attempted. Instead research into interpersonal relationships will be emphasised. Before reviewing the research in this area which has adopted a Kellian perspective it is necessary however to discuss the methodological techniques suggested by Kelly, and used in almost all studies of personal constructs since.

CHAPTER TWO

REPERTORY TESTS AND REPERTORY GRIDS

Kelly (1955) suggests two major kinds of methods for tapping individuals' personal construct systems. One of these, the self-characterisation sketch, has been relatively neglected while the other, based on the original Role Repertory Test and, in particular, the grid form of this test, has been very widely used and has proved more popular than the theory which originally spawned it.¹ The grid has come to be recognised as a useful technique by psychologists of varying theoretical persuasions, and is often treated as though it were another psychometric test (c.f. Anastasi 1976), despite the fact that the theory from which it derives rejects many of the assumptions underlying traditional 'objective' tests. (Fransella and Bannister 1977). It may well be that this is due to the link between theory and method being more tenuous than some (e.g. Bannister and Mair 1968) have claimed.

This chapter will present a brief overview of the assumptions and methods involved in the Repertory Test (Reptest) and Repertory Grid (Repgrid). No attempt will be made to be either comprehensive or detailed as the works by Bannister and Mair (1968), Fransella and Bannister (1977) and Slater (1977) provide a very full account.

¹ Hinkle (1970) reports that Kelly indicated that, were he to rewrite his book, the section on repgrids would be deleted, because of the adverse effects the popularity of the method had had on the acceptance and understanding of the theory.

The Role Construct Repertory Test

Kelly's major concerns were clinical. As a psychotherapist he saw his major task as that of facilitating change in his clients i.e. in their ways of construing. A psychological test therefore is useful, for Kelly, to the extent that it aids in the attainment of this goal. Such a test enables the therapist to effectively construe the clients constructions, revealing the directions in which the client is free to move and further indicating resources and problems of the client which may otherwise have been overlooked. In short the test should reveal as much as possible about the most important aspects of the testee's personal construct system.

For psychologists in general, rather than therapists, the aspects of the individuals construct system which are judged most important will vary depending on the aim of the study, but usually the psychologist, like the therapist, is concerned with role constructs i.e. those which the individual uses to construe other people's constructions. In order that the role constructs elicited be representative Kelly suggests the testee should provide his constructions of a number of people who play varying and important roles in his life. To this end Kelly presents a list of useful roles e.g. mother, father, sister, brother, a neighbour with whom you get on well, a neighbour whom you find hard to understand etc. The testee is to construe actual individuals who fill these roles in relation to him.

How are the constructs elicited? While there are a number of methods the most widely used involves the testee being presented with different 'sorts' of three of the people whom he has named as fitting various roles in relation to him e.g. a male subject might be given the names of his wife or girlfriend, his mother and his father. He

is then asked 'in what important way are two of them alike but different from the third?' In this way a dichotomous construct is elicited. The same procedure is then followed using other triads. Using this simple technique any number of constructs may be elicited through most subjects have a repertoire of between 20 and 30 different constructs (Hunt 1951, reported in Bonarius 1965).

Among the assumptions underlying this method are the obvious but important ones that, firstly the test is tapping pre-existing constructs and that the procedure itself is not leading to the generation of new constructs, and, secondly, that the constructs elicited are communicable i.e. 'that the words the subject uses in naming his constructs, and the explanations he gives, are adequate to give the examiner some practical understanding of how he is organising the elements in the test' (Kelly 1955, p.231). This latter assumption is vital, for without it it would be impossible to analyse the data obtained from the test, yet, Kelly points out, it is also 'the most precarious assumption' (p.231) underlying the use of the test.

In order to consider the reasons why this might be so it is necessary to digress slightly and to consider certain aspects of the nature of constructs which have not already been mentioned. These aspects have implications for the use of Reptests and Repgrids. According to Kelly (1955) 'construing is not to be confounded with verbal formulation' (p.51). This has two aspects. Firstly not all constructs may be communicated using language - many constructs are either pre-verbal or non-verbal e.g. those dealing with physiological systems.¹ This has implications for the use of the Reptest, which

¹ 'If a person is asked how he proposes to digest his dinner, he will be hard put to answer the question. It is likely that he will say that such matters are beyond his control ... because he cannot anticipate them within the same system he must use for communication. Yet digestion is an individually structured process, and what one anticipates has a great deal to do with the course it takes' (Kelly 1955, p.51).

is limited to dealing with constructs which are verbalisable, and which therefore is more useful with some people than with others, and for certain areas of construing than for others.

The second aspect of the relationship between language and construing to be dealt with here is the important point that while certain words may represent or symbolise a particular construct for an individual, the words themselves are not to be equated with the construct. Rather the words which represent a particular construct are elements within the context of that construct. Communication then 'is a matter of reproducing the symbolic element in hopes of eliciting a parallel construct in another person. The neatest way is to use a word as a symbol' (Kelly 1955, p.140). Since the Individuality Corollary posits that people differ in their constructions then it follows that different individuals may use the same words for different constructs or use different words to stand for very similar constructs. This may mean that communication between individuals may be more apparent than real and it certainly means that the interpretation of a Reptest protocol is not always straightforward (Thomas et al 1976). Although this is an important point and one that will be returned to it is important to stress that it would be a mistake to overemphasise the problems faced by the Reptest user in this respect, given that everyday interaction and communication rests on a basis of commonality of construing and particularly commonality in the use of language. Given that people do differ in their use of words then it would be useful for the Reptest user to be able to follow up more closely the meaning of an individual's constructs. This may be done through further questioning or through the use of the grid form of the test.

Repertory Grids

According to Personal Construct Theory constructs exist, not in isolation, but as part of a construct system. Thus the meaning of a particular construct is described by its relationships with other constructs in the system. The repertory grid is a method of tapping the system of constructs employed by an individual to a greater extent than is possible using a straightforward Reptest. Using a grid it is possible, for example, to determine whether two seemingly different constructs are used in the same way by the testee or, conversely, whether he uses two seemingly similar constructs in very different ways.

The basic procedure involved in the use of Repgrids is an extension of that employed in the Reptest. Constructs are elicited in exactly the same way; a set of representative figures is produced by the subject who is then presented with sorts of three figures to compare in terms of similarity and difference. The difference between the two methods is that the grid involves an extra step which is that the subject is required to assess all of the figures in terms of all of the constructs he has produced.

Essentially a Repertory Grid is a two-dimensional matrix consisting (usually) of rows representing constructs and columns representing elements. Usually the elements are people known to the subject, including himself, and the constructs have been elicited using the triad method described above. Neither of these conditions is essential however and a wide variety of grids and grid formats have been devised (see Bannister and Mair 1968; Slater 1976 for examples). The method of assigning elements to constructs has also varied. Kelly's original

procedure involved a simple dichotomy. Subjects indicated which elements were best described by the 'similarity' pole of the construct rather than its contrast; it being assumed that all other figures were best described by the contrast pole.¹ Landfield (1971) was concerned about the problem of range of convenience and introduced a variation of this procedure in which subjects assign elements to both poles of each construct and also indicate which elements cannot be described in terms of any particular construct. Other variations have involved allowing the subject greater freedom to discriminate between the elements by either rank ordering them in terms of each construct, or by using a semantic differential type of rating scale. (Bannister and Mair 1968 provide a full account of these methods).

Methods of Analysis

The simple Reptest can provide a great deal of information to the clinician about the constructs employed by the individual and the ways in which he uses them to construe himself and 'relevant others'. However in research, as opposed to psychotherapy, most emphasis has fallen on the grid form of the test and interest in the Reptest has centred mainly on the type of constructs elicited. For example Landfield (1971) has produced a fairly comprehensive set of 20 categories into which most constructs can be fitted. Examples of the categories are Social Interaction, Self-sufficiency; Imagination; External Appearance; Tenderness etc. Most of the categories are sub-

¹ An assumption which, as Mair (1967) has shown, is not entirely warranted.

divided e.g. Social Interaction: Active and Social Interaction: Inactive. Landfield provides a scoring manual which not only fully defines each category but presents a long list of constructs produced by his subjects and the categories to which they were assigned. Further details of Landfield's method of content analysis will be given at appropriate points in this thesis.

Repertory grids can be analysed in many ways using methods of varying statistical sophistication. Common to all the methods is that they allow for the relationships between constructs and the relationships between elements to be assessed. The measure adopted will depend on the method of element allotment used and will vary from a simple matching score to some kind of correlation coefficient. Such measures provide information about which constructs an individual uses in a roughly equivalent way and which seem to be independent, and about the people the individual perceives as being similar and which different, e.g. an individual may construe himself as being somewhat like his father and mother who are, say, quiet, shy and unambitious while his ideal self is closer to his girlfriend whom he views as outgoing, confident and ambitious.

Like any other similar matrices grids are amenable to multi-dimensional analysis and since Kelly's own introduction of a non-parametric factor analysis of grids, many different methods of cluster analysis and of factor analysis have been used with grids (Fransella and Bannister 1977). One of the most popular methods of analysis has been the principal components analysis devised by Slater (1977), and made widely available in the form of a computer program, INGRID.

It is this method which has been most used in the analysis of the data to be reported here. The

information provided by the analysis includes the relations between constructs, between elements and between constructs and elements in the common component space, as well as the loadings of constructs and elements on the major components derived from the analysis.

CHAPTER THREE

THE RELIABILITY AND VALIDITY OF BASIC GRID MEASURES

For a number of reasons the concepts of reliability and validity are not easily applied to Reptests and Repgrids. Firstly, and most importantly, since there is no one version of either technique but a wide variety of ways in which they may be employed, it is only possible to discuss the reliability and validity of particular forms of Reptest or Repgrid. Secondly, and related to the first point, the variety of formats is matched by the variety of information which may be extracted; it is therefore possible for some measures, derived from a particular form of grid, to be reliable and valid while others derived from the same grid are not.

A further problem lies in Kelly's disdain for operational definitions. The results of this have included the same operation being used as a measure of different theoretical constructs. For example, measures of the degree of relationships between constructs have been taken as indicating the tightness or looseness of the constructs concerned (Bannister 1962), where a tight construct is one which leads to unvarying predictions; as an index of relative superordinary (Bannister 1965 a), and as an indication of the extent to which constructs are best described as constellatory or propositional (Levy 1956), where constellatory constructs are those, involved in stereotyped thinking, which fix 'the other realm memberships' of their elements, and propositional constructs are those which carry no implications regarding the other realm membership of their elements.

In general, attempts to define operationally terms within the theory have been few, though standardised versions of the grid, designed to measure particular concepts, have been developed (e.g. Bannister and Fransella 1966; Bieri et al 1966).

Because of the problems discussed above no attempt will be made here to provide a general assessment of the reliability and validity of these techniques. Rather, the emphasis will be on particular kinds of information and measures, derivable from Reptests and Repgrids, which are made use of in the research to be reported here. The opportunity will be taken, while discussing the reliability and validity of these measures, to review some of the literature relevant to the present research.

Construct Content

A standard distinction often made is that between the content of a construct system i.e. the particular constructs ^tis^s contains, and its structure (Duck 1973b) or organisation (Landfield 1971) which refers to the ways in which the constructs interrelate. Although not an ideal distinction, for the content of a construct system i.e. the individual constructs, can only have meaning in terms of the relationships between constructs (c.f. Hinkle 1965), this distinction will be made use of in this discussion.

Construct content then refers to some of the information which can be gained from the Reptest without resorting to grid techniques. The consistency of the Reptest was an early concern and Kelly himself reports the study of Hunt (1951) who found that the proportion of constructs repeated by subjects who were tested and retested after an

interval of one week was 70 per cent. This was so even though a different set of elements was used on the second occasion. In line with the tenets of Personal Construct Theory Hunt's method of assessing the equivalence of constructs was to ask the person who produced them. A rather different approach was adopted by Fjeld and Landfield (1961) who, using an early version of the construct category system reported fully in Landfield (1971) and mentioned above, found that, after a two week interval, subjects showed a high level of consistency in their constructs whether or not the set of elements was the same on both occasions ($r = .79$), or the elements were different ($r = .79$) or the subject was free to choose the elements on both occasions ($r = .80$). Landfield (1971) reports further studies of test-retest consistency using his category system which indicate that construct content is 'relatively stable' over the short time intervals used (up to a month). He also found that 'more maladjusted clients were found to be both more and less stable than their better adjusted counterparts' (Landfield 1971, p.57), which given that 'rigidity and instability are common descriptions of more maladjusted people' (p.57) is perhaps some evidence of the validity of the construct category measures used.

Sperlinger (1976) looked at consistency over a longer time period. He retested 18 subjects after a period of between 5.5 and 11 months had elapsed since their first testing. On each occasion subjects produced 12 constructs. Construct content consistency was assessed in two ways. Using a fairly strict criteria of consistency whereby two constructs were considered to be identical 'if one pole of each of the two constructs was given exactly the same word(s), and the other poles of the two constructs were also given the same word(s) or given a word(s) which appeared to have the same meaning (p.344),

Sperlinger found that an average of 2.5 constructs were repeated from test to retest (S.D. = 1.3). Using a less strict measure of consistency, a modification of Landfield's (1971) procedure it was found that '57.7 per cent of the constructs of each subject fell into the same rating categories on the two occasions.' (p.345).

Although the reliability coefficients reported here are relatively low by the standards normally set for questionnaires and inventories, they are satisfactory given that Kelly stressed the need to be able to assess change, and that the assessment of the equivalence or similarity of constructs is fraught with difficulty, especially when the judgement of similarity is made by the experimenter and not by his subjects, as in the Landfield and Sperlinger studies.

Assessing the validity of the constructs elicited using a Reptest is even less straightforward, and is perhaps best looked at in terms of research and clinical studies which have successfully used the Reptest. A large number of these studies are reported in Bonarius (1965), Bannister and Mair (1968), Fransella and Bannister (1977), Ryle (1975), Slater (1976) and Adams-Webber (1979). The work of Landfield (1971) and Duck (1973b) to be reported in detail later provides good evidence that the constructs elicited using Reptest procedures may be usefully related to such factors as therapist-client communication and friendship.

Further evidence for both the success of the Reptest in eliciting personal constructs and for the proposal that such constructs are personal, as suggested by Kelly in his Individuality Corollary, comes from those studies which have compared subjects 'use of their own constructs with their use of provided constructs (see Adams-Webber 1970a for a review). Thus for example Fager (1954 reported in Bonarius 1965),

Bonarius (1965), Landfield (1965) and Isaacson (1966 reported in Adams-Webber 1970a) all found that subjects indicated a preference for their own personal constructs over provided constructs in terms of their usefulness for describing other people. Similarly, a number of studies, to be reviewed in more detail in a later chapter, have shown that individuals make more extreme ratings on their own constructs than on provided constructs (e.g. Cromwell and Caldwell 1962; Landfield 1965; Isaacson and Landfield 1965; Bender 1968; Bonarius 1971).

A slightly different perspective is provided by studies which show that information about another's personal constructs can be successfully used to predict his behaviour. Payne (1956, reported in Bonarius 1965) hypothesised that people will understand another better if they have some knowledge of that individual's personal constructs than if they only have knowledge as to how the individual is construed by others who know him. He showed that subjects were more accurate in their predictions of another's questionnaire responses if they had been provided with a list of his constructs than if they had been given a list of constructs formed about the other person by his peers. A study by Cantor (1976) showed that clinicians could successfully predict a subjects main needs, as measured by the TAT and the EPPS, if they were provided with information about the subjects most salient personal constructs.

Although the above discussion is of necessity rather brief and very selective it is hoped that enough evidence has been presented to suggest that the information gained from a Reptest may be both reliable and very useful. As already mentioned further studies relevant to this theme will be discussed at various points below.

REPERTORY GRIDS AND THE STRUCTURE OF PERSONAL CONSTRUCT SYSTEMS

The basic information derived from the grid form of the Reptest concerns structural aspects of the individuals construct system i.e. the relationships between the constructs and the relationships between the elements, which provide the bases for further analysis in terms of factors or principal components. It is these basic aspects which will be considered here. Two further areas of research based around measures derived from grids will be considered in greater detail in later chapters. These are concerned with the measurement of the degree of organisation or 'complexity' in personal construct systems, and with the assessment of the importance of particular constructs to an individual in terms of their 'meaningfulness' or of their level of superordinary within his personal construct hierarchy.

Construct Interrelations:

An important distinction may be made in repertory grid testing between 'element consistency' and 'construct pattern consistency'. The former refers to consistency in terms of element allocation on individual constructs, while the latter refers to consistency in terms of the pattern of correlations between constructs. The former may be low without the latter being affected (e.g. Fransella 1970). It is construct pattern consistency which will be our concern here.

Studies of the reliability of construct interrelationships have typically found that test-retest reliability coefficients, while significant, are low by usual psychometric standards, and that they vary greatly between individuals. For example Mair and Boyd (1967) using passport-type photographs as elements administered grids to

delinquent boys with a two week interval between test and retest. They calculated reliability coefficients for three supplied constructs and found them to vary within the range .43 to .72. For individuals taken separately the range of coefficients was -.56 to .93. Gathercole et al (1970) used Bannister's Consistency measure (see Fransella and Bannister 1977) to assess overall construct pattern stability to assess the reliability of 8 x 8 grids. Test-retest consistency was higher if the same (.72) rather than different (.66) elements were used on the two occasions. Individual differences were large; the range of reliability coefficients being from .08 to .94. Watson et al (1976) found the mean reliability of their grid, which had situations as constructs and possible reactions as elements, to be .74 after a 7-10 day interval. The range of individual reliability coefficients was from .30 to 1.00.

Bannister and Mair (1968) conclude 'that using elements such as people known personally to the subject, with supplied constructs of a conventional type and with either a rank order or split-half matching administration, normal subjects, doing repeat grids, on either the same or different elements, tend to yield co-efficients of reliability which fall largely within the range 0.6 to 0.8'. (p.160) Although a gross generalisation this statement does adequately summarise the position with regard to the majority of uses of grid techniques, while, at the same time, masking the variations which may follow from differences in grid format or administration (e.g. Bannister and Mair obtained a test-retest reliability coefficient of .56, after a six week interval, when 15 elements were ranked in terms of 6 constructs; the corresponding figure when only 10 elements were used was .86).

On the basis of the relatively low reliability coefficients obtained some investigators (e.g. Gathercole et al 1970; Bavelas

et al 1976) have questioned the use of grid techniques entirely. However this is to ignore the points raised at the beginning of this chapter regarding the impossibility of ever establishing the reliability of the grid, for there are many grid formats from which many measures may be derived.

It is also to ignore the evidence for the validity of grid techniques. In general much of this evidence is contained in clinical reports which are by their nature too detailed to be adequately dealt with here. However there are other studies which provide validity evidence for the pattern of construct relations which is derivable from a grid. Mair (1966) showed that the correlations between supplied constructs in a grid partly reflected the similarity between the dictionary definitions of the words. The constructs used in the grid consisted of pairs of synonyms with one word in each pair being 'easy' and the other 'difficult' e.g. menacing and minatory. Matching scores between synonyms were significantly greater when the subject knew the meaning of the difficult word than when he did not, in which latter case the matching scores were at a chance level. That deviations from the norm may be significant is shown by the findings that thought-disordered schizophrenics (Bannister et al 1971) and psychopaths (Widom 1976) produce significantly more 'deviant' patterns of construct relationships than do normals.

Such research suggests that construct interrelationships may be meaningful and certainly randomly completed grids differ greatly from grids completed by people (Slater 1977). Yet test-retest reliabilities are generally relatively low. This need not be an indication of invalidity for the theoretical structures, and the relationships between them, assessed by grid methods are not proposed as static and invariant.

Since change is seen by Kelly as an important feature of personal construct systems it would be appropriate if grid techniques could be used to validly assess such changes as may take place. From this perspective the low reliabilities reported in the literature may be a result of the grids sensitivity to change than to random responding on the part of the subjects. This argument is of course applicable to all measures which may be extracted from grids; however studies of changes in construing have largely been concerned with changes in construct interrelations. Again the majority of these cases have been clinical in nature (e.g. Fransella 1970, 1972; Morris 1977; Ryle 1975; Ryle and Lipschitz 1975; Skene 1973) but a number of experiments have been performed in an attempt to assess the efforts of validity outcomes on the degree of linkage between constructs.

Bannister (1963; 1965b) was primarily concerned with testing the effects of validation and invalidation on the overall level of relationships between constructs i.e. on 'intensity'. In these experiments subjects rank-ordered a set of photographs on the basis of a list of supplied constructs. On a number of successive trials each subject ranked a different set of photographs on the same constructs. Subjects were given feedback about the 'accuracy' of their judgements and it was this feedback which constituted the experimental validation or invalidation. The nature of the feedback varied between the four experiments reported in the two papers; subjects were given both positive and negative feedback or they received only one kind of feedback i.e. they were told that they were doing well or that their judgements were inaccurate (according to biographical information possessed by the experimenter). The results showed that while validation led to a general increase in the degree of relationships between constructs, invalidation did not lead to a significant

lessening of intensity but rather to changes in the pattern of construct relationships. This latter effect would of course be reflected in low test-retest correlations.

Assuming that the subjects in the above experiments 'experienced' the validation outcomes in the same way as the experimenter, the studies indicate that the grid may be used to assess accurately changes in construing. Further evidence along these lines is provided by Ryle (1975) who hypothesised that some constructs would be more stable in their relationships than others, and that it should be possible to identify such constructs on the basis of two grid measures: firstly the amount of variance in the grid accounted for by each construct; and secondly the number of significant correlations with other constructs exhibited by each construct. Five groups of subjects were studied; each group completed two identical grids at intervals of between one year and twenty months. The three most stable constructs and the three least stable constructs were identified and compared in terms of the two measures mentioned above. The most stable constructs were found to have accounted for more variance in the first set of grids than the least stable constructs. The number of significant correlations did not distinguish between stable and unstable constructs in 'standard' grids, in which people were the elements, but did do so in 'dyad' grids in which relationships between people were the elements.

The studies described above plus a number of clinical studies suggest that changes in construct interrelations expressed in repertory grids may reflect meaningful changes in the individuals construing. However this does not adequately account for the rather low test-retest coefficients obtained when the retest takes place immediately after the initial test. Even while conceding that at least some of this low reliability may be due to random responding

rather than to any meaningful changes having taken place, it may still be pointed out that the degree of consistency exhibited by an individual is an important indicator of certain aspects of his construing (Bannister and Fransella 1966). Specifically it has been shown that thought-disordered schizophrenics may be distinguished from non thought-disordered schizophrenics and from normals on the basis of two scores derived from a repertory grid. The measures are intensity, i.e. the overall degree of interrelationships between constructs in the grid, and consistency which refers to the immediate test-retest reliability of the pattern of construct relationships. Thought-disordered schizophrenics are significantly lower in both of these measures than are normals. Bannister et al (1975) argue that the positive correlation between the two measures follows from their personal construct theory viewpoint of thought-disorder as 'grossly loosened construing' for 'if you are certain today that decency is essentially British (high intensity, tight construing) then you may well be certain of this tomorrow, but if you become vague as to whether decency is related at all to British (low intensity, loose construing) then tomorrow you may toy with the notion that decency may relate to foreign (low consistency, loose construing).' (p.170).

In this section we have been concerned with the reliability and validity of the interrelationships between constructs revealed by the repertory grid. For ease of exposition evidence related to the components which may be derived from these interrelationships, and to the overall degree of organisation exhibited in them, will be discussed in later sections.

Relationships between Elements

Just as a repertory grid can be analysed 'horizontally' in order to reveal the interrelationships of constructs, so may it be analysed 'vertically' to reveal the relationships between elements. Though this type of analysis has played an important part in clinical work, where it may be of interest, for example, to know how the client views himself in relation to his parents, or his spouse, less emphasis has been placed on it than on the analysis of construct interrelations.

Sperlinger (1976) looked at the stability of perceived 'self-other' relationships over an average period of 7.7 months. His subjects completed two identical 12 x 12 repertory grids and the element distances were derived using Slater's INGRID program. Mean element distances were calculated between 'self' and the other eleven elements giving a test-retest reliability of 0.95 for the group as a whole, indicating a fairly general tendency to, for example, perceive the 'self' as being more similar to 'father' than to someone who is 'hard to get along with'. A reliable measure of consensual construing was thus derivable from the grid but individuals' consistency coefficients were lower, having an average of 0.57, a figure which was deflated by four of the eighteen subjects exhibiting little consistency between the two test occasions.

Since element relationships per se are not considered in the present research only a few examples of studies providing evidence for validity will be given. In his study Sperlinger found that 'self-ideal-self' discrepancy, a reliable measure with a test-retest coefficient of 0.87, was positively correlated with scores on the Neuroticism scale of Eysenck's Personality Inventory (EPI), thus reflecting the results of Ryle and Breen (1972) who found that students

with neurotic problems made a greater distinction between their 'self' and 'ideal self' than did controls. Bender (1976) tested the hypothesis that there is a relationship between the way people construe others and the way they behave towards them. He found that element matching scores on a repertory grid significantly predicted both how the subject reported behaving towards the people involved and how the subject's spouse reported the subject behaving towards the same people.

Studies of changes in element construing are mainly clinical in nature (e.g. Fransella 1970; Ryle and Lipschitz 1975 among many others). Landfield (1971), in a study to be reported in more detail later, found that changes in self construing on the part of a client in psychotherapy could be related to degree of improvement. Specifically the most improved clients were found to have changed their construction of themselves, on their own personal constructs, in such a way that they had moved towards what their therapist considered to be ideal. Improvement in this study was assessed blind by independent judges on the basis of pretherapy and terminal interview transcripts.

The emphasis in studies of element interrelationships has tended to fall on the 'self' and 'ideal-self' and their perceived similarity to each other and to other people (e.g. Norris and Makhoul-Norris 1976). It is possible to derive an overall 'identification' score from a grid (e.g. Jones 1954, reported in Bonarius 1965). This measure will not be dealt with here however for it is more appropriately considered along with 'cognitive complexity' and other measures of personal construct organisation.

Factors and Components

Kelly himself suggested the use of factor analysis in order to simplify the problems involved in interpreting the complex set of data provided by a repertory grid. He devised a method of non-parametric factor analysis which has proved to be the forerunner of many sophisticated methods of cluster, factor or principal component analysis which have been applied to grids. Essentially such methods are useful to the extent that they allow the psychologist to make sense out of the information his subject has provided him with, and it is easier for most of us to construe in two dimensions simultaneously than in, say, sixteen. To this end the kind of two-dimensional graphs favoured by clinicians making use of Slater's INGRID program are obviously useful (c.f. Ryle 1975)

Questions may be asked however about the meaningfulness of the components or factors extracted. One early study which provides evidence for the validity of factor loadings is that of Levy (1956) who was concerned with the theoretical distinction between constellatory and propositional constructs. Using Kelly's non-parametric factor analysis Levy operationally defined constellatory constructs as those with significant loadings on the most general factor, the remainder being viewed as propositional. Levy identified five constructs of each type from each of his subjects' grids. The subjects were given two photographs of male students and asked to describe each of the individuals depicted in the photographs in terms of the ten previously elicited constructs. Subjects were also required to fill in a questionnaire in which they were asked to make predictions about the behaviour of the pictured individuals. After informing the subjects that while their predictions about one

individual's behaviour were mainly accurate (low invalidation), their predictions about the other were mainly inaccurate (high invalidation), the experimenter asked the subjects to repeat the two tasks. It was found, as predicted, that while high invalidation led to greater changes in construing than did low invalidation, this was due mainly to changes on constellatory constructs. This study therefore provides evidence for the construct validity of the measure used, since it would be expected from Kelly's theory that changes in construing on any construct would lead to similar changes on constructs related to the first; propositional constructs having, by definition, fewer links with other constructs should therefore have fewer implications in terms of change.

A later study by Edwards and Bennion (1974) also provides evidence for the construct validity of the measure used by Levy. They showed that group pressure tended to change ratings on either all or none of a subject's constellatory constructs, while change on propositional constructs took place independently. As already pointed out, however, the link between constellatoriness and factor loadings is not entirely clear-cut, and other investigators have used essentially the same measure as an index of superordinary (e.g. Bannister and Salmon 1967; Bender 1974).

The usefulness of factor analysis and related methods has tended to be assumed in recent work, and the availability of computer programs has meant that the techniques have been widely used (c.f. Slater 1976). Some of the measures discussed in the next chapter rely on the use of such techniques.

CHAPTER FOUR

PERSONAL CONSTRUCT SYSTEM ORGANISATION AND

ITS MEASUREMENT

Although the content of a personal construct system cannot entirely be divorced from its structure, for 'no construct ever stands entirely alone; it makes sense only as it appears in a network' (Kelly 1955, p.304), it is possible to derive purely organisational measures from a repertory grid since some information about an individual's construing would be available even if all details of the constructs and elements were removed from the completed grid. It would be possible to decide, for example, whether the elements were being construed in a relatively multi-dimensional way or whether a more uni-dimensional organisation was being employed. A number of organisational measures of this sort have been developed and these will be the focus of the present chapter.

It was James Bieri, a former student of Kelly's, who introduced the concept of 'cognitive complexity', which he defines as 'the capacity to construe social behaviour in a multidimensional way. A more cognitively complex person has available a more differentiated system of dimensions for perceiving others' behaviour than does a less cognitively complex individual.' (Bieri et al 1966, p.185). It is assumed by Bieri that increased differentiation is an aspect of psychological development, and that people reliably differ in the degree of complexity they exhibit i.e. cognitive complexity, for Bieri, is a trait which people display to a greater or lesser extent.

Both of these assumptions may be questioned from a Kellian standpoint.

Firstly it is doubtful that increased differentiation in itself implies greater complexity of construing, for which the different constructs need to be integrated (Adams-Webber 1970b); Kelly, it will be remembered, posits that constructs are integrated in some form of organisational hierarchy with constructs in subordinate and superordinate relations to each other. Without such integration the existence of great differentiation may merely indicate randomness rather than complexity, and Bannister's (1960; 1962) studies of thought-disordered schizophrenics suggests that this is the case. He has shown that such individuals are low in 'Intensity' (i.e. high in differentiation) as measured by repertory grid techniques; that this is no indication of complexity, but rather of no structure at all, is evidenced by the extremely low immediate test-retest correlations between construct relationships which such subjects produce.

This point is taken up by Crockett (1965) who states:

'a cognitive system will be considered relatively complex in structure when (a) it contains a relatively large number of elements and (b) the elements are integrated hierarchically by relatively extensive bonds of relationships' (p.49).

Thus, for Crockett, complexity of construing is dependent upon both the degree of differentiation in the system under consideration and the degree to which the different constructs are integrated. Although derived from a rather different theoretical framework Crockett's definition of complexity is more in line with personal construct theory than is Bieri's. However measures of the degree of integration present in a personal construct system have been less

readily developed and less widely used than have measures of differentiation, and thus reflecting the literature the discussion below will centre on the latter.

Before the various measures of differentiation are introduced however the second assumption made by Bieri, that cognitive complexity is best viewed as a trait, must be considered. As has previously been stressed Kelly emphasised that personal construct systems change; an emphasis which is antithetical to a trait approach. One aspect of the fluidity of construing is presented in the Fragmentation Corollary which states: 'A person may successively employ a variety of construction subsystems which are inferentially incompatible with each other'. The implication of this corollary for the notion of cognitive complexity is that an individual may be both 'complex' and 'simple', depending upon which of his construct subsystems is being considered e.g. a surgeon may have a very complex system of constructs for construing the insides of the human body, but a much more limited system with which he construes his patient's psychology.

These criticisms do not mean that measures of differentiation cannot be validly derived from grids. While change is an important feature of construct systems it does not take place randomly, and certain constructions are more resistant to change than are others (c.f. Hinkle 1965). The assumption of the existence and importance of such stability in construing forms part of the structure of Personal Construct Theory, and underlies any use of repertory grid techniques. Inter-individual comparisons can therefore be validly made but need not depend on the underestimation of change and inconsistency made by trait theorists (Mischel 1968).

Indices of Cognitive Complexity

Most measures of cognitive complexity are traditionally viewed as tapping cognitive differentiation rather than integration (Crockett 1965; Smith and Leach 1972). Attempts to assess integration have been fewer and have usually led to measures which involve far more time and effort on the part of the subject (Crockett 1965). Many and varied indices of cognitive differentiation have been devised however (e.g. Vannoy 1965; Bavelas et al 1976) and the present review will consider only a few of these i.e. those which have proved most popular and can be derived from repertory grids.

Most of these measures can be fitted into one of three categories:

- (1) Those concerned with the content rather than the structure of the constructs elicited i.e. measures which rest upon judgements as to the number of verbally different constructs produced by the subject. Crockett (1965) has developed a widely used measure of this sort, but it will not be considered here. A problem with such measures is that they do not take into account the ways in which the constructs are used; two seemingly different constructs may be functionally similar for example.
- (2) Those which are based on indices of the relationships between constructs (or elements) in a repertory grid. Based on matching scores or correlations this type of measure has been most widely used (e.g. Bieri 1955; Bieri et al 1966; Adams-Webber 1969; Bannister 1960; 1962), and various examples will be discussed below.
- (3) Those which derive from some form of factor or cluster analysis of a grid. Examples here include the number of 'significant' factors (e.g. Honess 1976); the percentage of

the variance accounted for by the first factor or component (e.g. Bender 1968) and the number of 'functionally independent constructs' (Landfield 1971). These will also be discussed.

The discussion below will focus largely around measures of the second type above and on the question of whether cognitively complex individuals are more accurate in their perceptions of others than are cognitively simple individuals. Measures which derive from faster analytic or related methods will be dealt with more briefly, and this section will be followed by a comparison of the various measures.

Cognitive Complexity and Social Perception

In this section will be described the measures of cognitive differentiation which are derived directly from matching scores or correlations between constructs. The index devised by Bieri (1955) has been most widely used. Having elicited a repertory grid from his subjects in the way described by Kelly, Bieri assessed a subjects degree of cognitive complexity-simplicity on the basis of similarity of construct patterns within the grid. Cognitive simplicity was denoted by the elements being sorted in the same or very similar way on several constructs, while cognitive complexity was indicated by low similarity. A modification of this procedure using supplied constructs and 6 point semantic differential scales was proposed by Bieri et al (1966), but it has not been used in the research to be described below. Bieri (1955) reports a test-retest reliability coefficient of 0.78 for his original measure. Bavelas et al (1976) obtained an average reliability coefficient of .45 over a three week period for the original measure and 0.67 for the modified version.

Bieri (1955) was concerned with individual differences in the accuracy of social perception; a concern which, despite the problems raised by Cronbach (1955), has remained central for investigators of cognitive complexity. Bieri hypothesised that since cognitively complex individuals draw greater distinctions between people than do cognitively simple individuals they should also be more successful in predicting others behaviour. He found a significant correlation of 0.29 between cognitive complexity and accuracy in predicting classmates' responses to a Situations Questionnaire. Further analysis showed that this relationship was due more to the accurate perception of differences between the subject and the others ($r = .35$) than to the accurate perception of similarities ($r = .02$). Cognitively simple subjects tended to perceive unwarranted similarities between themselves and others ($r = .40$).

Other studies (e.g. Meaders 1957; Adams-Webber 1967, both reported in Adams-Webber 1969; Levanthal 1957; Honess 1976) have generally failed to demonstrate that cognitive complexity is significantly related to overall accurate perception of others. However the tendency of cognitively simple judges to overestimate the similarity of others to themselves is well supported, thus suggesting that cognitively complex judges may be more accurate in predicting the behaviour of dissimilar others but that cognitively simple judges will be as accurate in predicting similar others. One of the studies mentioned above, Honess (1976), is particularly interesting in the present context since rather than involving the prediction of behaviour (or at least reported behaviour), subjects were asked to predict how the target others construed themselves. In Kelly's

sense the subjects were therefore being asked to play a role, albeit a rather limited one, in relation to the target person. Honess found that cognitively complex judges were more accurate in their perception of differences between their own self-conception and those of the targets ($r = 0.27$) but that there was no relationship between cognitive complexity and the accurate perception of similarity ($r = -0.05$). Cognitively simple judges assumed greater similarity between themselves and others ($r = -0.37$).

Earlier studies by Adams-Webber (1969) and Adams-Webber et al (1972) had taken a wider view of the relationship between effective role-playing and cognitive complexity. Arguing that 'from a construct theory point of view, the fundamental issue of 'person perception' is ... whether one individual ... can grasp the other's personal axes of reference as a basis for effective communication and understanding' (Adams-Webber 1969, p.212), these authors hypothesised that cognitively complex subjects would be more able to identify another's personal constructs after a brief interaction than would cognitively simple subjects. The hypothesis was supported when the subjects had to pick out the other's constructs from a list containing either an equal number of 'conventional' constructs (Adams-Webber 1969) or from a list containing an equal number of constructs elicited from a third subject (Adams-Webber et al 1972).

The measures used in the above two studies were different from each other and from that devised by Bieri. Adams-Webber (1969) used the average match between rows (AMR) as his measure: a high AMR score indicating cognitive simplicity. Bavelas et al (1976) obtained a correlation of 0.76 between this measure and Bieri's (1955) measure,

and a test-retest reliability coefficient of 0.53 over a period of three weeks. Adams-Webber et al (1972) followed Adams-Webber (1970c) in arguing that measures of complexity are 'primarily indices of assimilative projection' i.e. that cognitively simple individuals tend to construe others in the same way that they construe themselves. The 'explanatory power of the self-concept' was therefore used as the measure of differentiation in this study. Bavelas et al obtained a correlation of 0.85 between this and the AMR measure.

A study by Olsen and Partington (1977) adds further support to the view that a high level of cognitive differentiation allows for greater possibilities in the construing of the personal constructs of others. These authors investigated the relationship between cognitive complexity (assessed using the AMR measure) and scores on Feffer's (1959) Role Taking Task. This technique requires subjects to make up stories and then retell the story from the different perspectives of three characters in the story: a subject's score is based on his ability to 'refocus' while still maintaining continuity between the three versions of the story. A highly significant correlation of 0.52 was obtained thus suggesting that high cognitive differentiation aids social effectiveness.

That great cognitive differentiation may reflect cognitive confusion rather than social sensitivity follows from the work of Bannister (e.g. 1960; 1962; Bannister and Fransella 1966; Bannister and Salmon 1966; Bannister et al 1971) which has repeatedly shown that thought disordered schizophrenics have a lower 'Intensity' score than either normals or non-thought disordered schizophrenics. The calculation of an Intensity score usually involves the use of a rank-order grid; the correlations between the constructs are squared,

multiplied by 100 and summed. It therefore seems closely related to Adams-Webber's (1969) AMR index and, by extension, to Bieri's (1955) measure of cognitive complexity. How may the seemingly conflicting findings involving the different measures be reconciled?

Firstly, a distinction between thought disordered schizophrenics and cognitively complex individuals lies in the consistency of the pattern of construct relationships obtained when two grids are completed one after the other. While relatively high consistency is displayed by normals, thought disordered schizophrenics display little consistency. It seems that the construct system of the former, while it may be highly differentiated, is also integrated but the same is not true of the latter group. That Intensity seems to be affected by degree of integration as well as differentiation is supported in a study by Hayden (1977) in which the 'social adaptiveness' of a group of emotionally disturbed boys was rated by the staff and was found to correlate with the boys intensity scores ($r = -.36$), such that the more socially adapted boys displayed more cognitive differentiation. In individuals who retain some conceptual structure it would therefore appear that Intensity scores relate to social effectiveness in the same way as the other measures discussed above.

A second point concerns the unexpected findings of Honess (1976) who found Bieri's measure of cognitive complexity to be unrelated ($r = -0.07$) to Intensity. He also found the latter to be unrelated to performance in his person perception task. It is difficult to account for the lack of relationship between the two indices of differentiation but the low reliability of Intensity may be important here (Bannister 1962; Honess 1978). Further studies of the inter-

relationships of various grid measures of complexity will be discussed below, after measures dependent upon further analysis of the grid have been described.

Structural Measures derived from Factor Analysis and Similar Methods

Given the very widespread use of multivariate techniques in the analysis of repertory grids it is not surprising that measures of the degree of structure in a grid have developed which are based on these techniques. Thus it would be expected that, for example, a grid which was highly organised as compared to one which exhibited less organization (or greater 'complexity') would lead to fewer factors, components, or clusters being extracted. This has indeed been used as a measure of differentiation and we shall be considering here Landfield's measure of 'functionally independent constructions' (FIC) which is based on a straightforward count of the number of relatively independent clusters of constructs which may be derived from a grid. The other measure to be dealt with in this section is the percentage of the variance accounted for by the first factor or component extracted from the grid; a highly structured grid would be expected to produce a higher figure for this measure than a grid in which the constructs are less highly related.

Landfield (1971) defines FIC as 'the total number of separate construct units employed by a subject on a particular Rep Test' (p.58). Although in principle derivable from any grid format Landfield has used a particular form of the grid in order to assess FIC. Essentially an extension of the original binary grid introduced by Kelly the method used by Landfield does not rest on the assumption that all the elements in the grid are within the range of convenience of all the constructs.

Subjects are allowed to indicate that they are undecided as to which pole of a construct is applicable, or that a construct is irrelevant in judging a particular element. These two types of ratings are counted as the same for the purposes of calculating the FIC score.

A detailed outline of the procedures involved in calculating FIC will not be given here. Briefly it involves the calculation of relationship scores between constructs or elements; an arbitrary criterion¹ is used such that a relationship score greater than this indicates that the two constructs or elements involved are part of the same cluster; the FIC score is the number of different clusters or constructs which result from this procedure. The score can be calculated both horizontally for constructs yielding the FIC (c) score, and vertically for elements or 'people constructs' yielding the FIC (p) score. These two scores are significantly related ($r = 0.69$) and have usually been summed by Landfield to give what he has designated as the FIC (cp) score.

FIC scores appear to be relatively stable over time. Landfield reports a study in which therapists and clients completed grids at monthly intervals; the same elements were used on each occasion but constructs were elicited each time. For therapists' FIC (cp) correlations over three months ranged from 0.83 to 0.95. Correlations for clients were much lower (0.41 to 0.51) but, as will be described in chapter 6, the instability of clients' FIC scores could be at least partly accounted for. Landfield (1976) hypothesised that grid

¹ Landfield (1971) took as his criterion a relationship score of 12 out of a maximum possible of 15.

measures could differentiate a group of patients who had made serious suicide attempts from other groups of patients, including a group who had made suicidal 'gestures', and a group of better adjusted students. Arguing that one feature of construing which may lead to a suicide attempt is the breakdown of organisation within the system, Landfield hypothesised that the patients who had made serious suicide attempts would have higher FIC scores. This hypothesis was supported, indicating once again the problem of assessing whether such measures assess complexity or disorganisation. (c.f. Landfield 1977).

A measure which is used in the present research is the percentage of the variance accounted for by the first principal component extracted from a grid. This has been conceived as conceptually similar to Bieri's measure of complexity (e.g. Chetwynd 1977) with cognitively complex subjects producing grids which lead to the extraction of a first component which accounts for relatively little variance while cognitively simple subjects produce a unidimensional grid in which the first component accounts for a relatively large amount of the variance. The discussion here will centre on principal components analysis but of course the same measure could be derived from any factor analytic method (c.f. Bonarius 1965; Crockett 1965).

Sperlinger (1976) tested the stability of the measure, derived from Slater's INGRID program, over an average period of 7.7 months. Using grids with the same elements, but newly elicited constructs, he obtained a test-retest correlation of 0.28 which was not significant. Sperlinger suggests that one possible cause for this low level of consistency was the small size of the grid employed (12 constructs; 12 elements) but does not explain why this particular measure should be

so sensitive to the size of grid. Unfortunately this study is the only one the author has found in the literature which presents a test-retest reliability coefficient for this measure. Given that only 18 subjects were involved it would therefore be premature to write-off the measure as unreliable. Certainly the finding of Slater (1977) that

'Experimental grids hardly ever resemble arrays of random numbers, even remotely. Undoubtedly the commonest and most conspicuous difference is the relatively large amount of variation associated with the major component,' (p.136)

does not suggest that the measure is meaningless.

Ryle and Breen (1972) presented evidence that normal and neurotic subjects could be differentiated according to the percentage of variance accounted for by the first two components combined. Neurotics were found to have a 'simpler' construct system with the first two components accounting for significantly more of the variance. Stringer (1976), in an investigation of planning proposals, found that coloured maps, as opposed to black-and-white maps, and maps with a full Ordnance Survey base, as opposed to only a partial Ordnance Survey base, were construed in a more differentiated way i.e. the amount of variance accounted for by the first component was less. He also found that women who frequently used the shopping centre concerned produced grids with smaller first components and larger third components than did women who used the centre less frequently and lived further from it. Findings which, as Stringer says, 'seem to be intuitively quite meaningful,' and thus lend some support to the further use of the percentage of variance accounted for by principal components as an index of the degree of structure present in a grid.

The Comparison of Measures of Construct System Organisation

The concept of convergent validation (Campbell and Fiske 1959) requires that different indices of the same trait be correlated. Vannoy (1965) investigated the generality of cognitive complexity by correlating 20 measures which he considered should be related to such a trait. That he obtained low intercorrelations between the measures, and factor analysis revealed the existence of eight factors, is not surprising given the rather diverse set of measures he used which included scales to assess such variables as authoritarianism, intolerance of trait inconsistency, category width, independence of judgement and intelligence as well as more usually recognised indices of cognitive complexity such as a modified version of Bieri et al's (1966) instrument. His conclusion that 'cognitive complexity is not as general a trait as has sometimes been implied in the literature' (p.394) is however only what would have been expected on the basis of Kelly's theory.

Seaman and Koenig (1974) adopt a slightly different approach in that they obtain a number of measures from a single repertory grid. Like Vannoy however their measures do not all derive from a personal construct theory background. Three of their measures are derived from Bieri et al (1966) whose grid format they employ; as well as an overall cognitive complexity score, they also calculate separate scores for the ratings of positively valued figures (+CC) and negatively valued figures (-CC). Fiedler (1967) is the source for three other measures: the 'most preferred person' score is the average evaluation of the positively valued figures, the 'least preferred person' score is the average evaluation of the negatively valued figures,

while the 'assumed similarity between opposites' score is the difference between them. The final measure was a modified version of Scott's (1962) index of cognitive complexity derived from information theory.

Correlations between the measures were higher than in Vannoy's study but three factors could still be extracted. The first and third reflected the low correlation of 0.209 between +CC and -CC, being interpreted as the complexity of ratings of positively valued persons, and the complexity of ratings of negatively valued persons, respectively. The second factor reflected the tendency to describe negatively valued figures in an extremely negative way.

These two studies indicate the futility of treating cognitive complexity as a generalized and unitary trait with straight-forward links between different theoretical perspectives. Indeed the studies of Kuusinen and Nystedt (1975a) and Honess (1976) suggest that even indices derived from personal construct theory to assess essentially the same variable may not be highly correlated. Honess, as already mentioned, found that Bieri et al's (1966) measure was unrelated to Bannister's (1960; 1962) 'intensity' score; he also found Bieri's index to be unrelated ($r = 0.05$) to the number of factors with eigenvalues greater than unity, a relationship which Kuusinen and Nystedt (1975a), despite the generally low correlations in their study, found to be significant ($r = -0.35$).

The findings of Adams-Webber (1970c) and Bavelas et al (1976) are rather different. In both these studies measures of cognitive complexity derived from analyses of the relationships between constructs were not only, in the main, highly related to each other but they were also related to measures of 'constellatoriness' (stereotyping)

and 'identification' derived from analysis of the relationships between elements. This was most strikingly displayed in Adams-Webber's finding of a correlation of 0.99 between the average match between rows and the average match between columns.

Both studies indicate that simply rotating a grid through 90° will not lead to independent measures of constellatoriness or cognitive complexity. Whether such findings are indicative of an overall lack of validity for grid measures of construct system structure is doubted by Adams-Webber (1970c), for

'the more unidimensional the structure of an individual's system (cognitive simplicity), the narrower the range of events which he can discriminate in terms of his constructs (constellatoriness), and the more he will generalize his 'most available elaborated system: his construction of himself '(identification)'. (p.88)

From a personal construct theoretical viewpoint then it would be expected that measures of the three variables would be highly related. Bavelas et al went on to show, however, using Monte Carlo techniques, that the scoring methods for the various measures are not independent particularly as the ratio of checks to blanks in the grid departs from 50/50. This is an important but not altogether surprising finding, for, to the extent that the various measures proposed merely assess the degree of overall organisation in a grid, they should be related even when derived from randomly completed grids. Such grids may be less organised (Slater 1977) but there is no reason to expect measures of the degree of organisation present to be unrelated.

It is difficult to reconcile, on the one hand, the studies of Kuusinen and Nystedt (1975a) and Honess (1976) which found low

correlations between various measures of cognitive complexity and, on the other, those of Adams-Webber (1970c) and Bavelas et al (1976) which found measures of complexity to be highly related, not only with each other, but also with measures purported to assess other variables. Perhaps one clue lies in the fact that dichotomous rating scales were employed in the latter two studies while Kuusinen and Nystedt used seven point scales, and Honess, five point scales, in their grids. It may be that overlap between scoring methods is minimised when rating scales are used. Evidence on this point is lacking however.

Conclusion

Probably more than in any other area of Personal Construct Theory research Kelly's refusal to provide operational definitions for his constructs has led to great problems in the study of individual differences in construct system organisation. Consider, for example, the studies of Adams-Webber (1970c) and Bavelas et al (1976) which operationalized 'constellatoriness' in terms of relationships between figures and compare this with Kelly's discussion of constellatory and propositional constructs:

'A constellatory construct is one which fixes the realm membership of its elements - for example, stereotypes:

'Anything which is a ball has got to be ...' Since this is a ball, it must be round, resilient and small enough to hold in the hand.'

'A propositional construct is one which does not disturb the other realm memberships of its elements - for example

'philosophical attitudes': 'Any roundish mass can be considered among other things, as a ball'; 'Although this is a ball, there is no reason therefore to believe that it could not be lopsided, valuable, or have a French accent'

(Kelly 1955, pp.156-157).

There seems to be at least as many grounds here for viewing constellatoriness in terms of relations between constructs, as Levy (1956) does, as there are for viewing it in terms of relations between elements, and from this point of view there appears to be no reason why measures derived from 'horizontal' and 'vertical' analysis of grid should be uncorrelated. However no agreed upon measure of 'constellatoriness' exists. In some ways the problem is due to the flexibility of the grid itself from which new measures can endlessly be derived, without there necessarily being any theoretical rationale behind them.

The plethora of measures of cognitive complexity and related concepts suggests a strong and widespread belief in the view that one of the most important ways in which the structure of different individuals' personal construct systems differ is in terms of the overall degree of organisation present. At one end of the scale is the 'simple' unidimensional system while at the other is the 'complex' multidimensional system. However, as the work of Bannister (1960; 1962) indicates, there is more to complexity of construing than multidimensionality for without the various dimensions being integrated in some way confusion will result (c.f. Crockett 1965; Adams-Webber 1970b). According to Kelly constructs are related hierarchically and it is the relationships of this sort, between

superordinate and subordinate constructs, which are not directly revealed by the measures reviewed in this chapter. Langley (1971) has suggested that moderate, rather than very low, correlations between constructs are revealing of complexity which requires the existence of some degree of structure. However the procedure relies upon the use of a single dimension to order the structure of the construct system and infers, rather than directly reveals, the degree of integration present.

Smith and Leach (1972) and Landfield (1977) have devised measures derived from grids which they claim are measures of integration. The great difference between the two measures again illustrates the problems discussed above. Smith and Leach claim that their measure, which is based on a hierarchical cluster analysis, reflects the complexity of the system structure. The measure is reliable, unrelated to Bierer's measure and positively related to Harvey's 'This I Believe' test, such that cognitively complex subjects construe 'abstractly' rather than in the 'concrete' manner of the cognitively simple. Honess (1976) found that the Smith and Leach measure did not differentiate between subjects in terms of the accuracy of their interpersonal construing. Although the measure seems to have promise too little research has been done to make any evaluation possible.

Landfield's (1977) 'ordination' measure suffers from the lack of published research involving it. Landfield claims that when used in conjunction with his 'functionally independent construction' (FIC) measure of differentiation his new index enables the conceptually disordered to be distinguished from the conceptually complex. He presents evidence that, of subjects classified as highly differentiated,

high integrators viewed others more positively and were more accurate in their predictions of others' construing than low integrators. The derivation of the ordination score rests upon the assumption that extremity of rating reflects meaningfulness, and therefore is a possible indication of superordinary; this assumption will be discussed in the next chapter. A grid making use of 13-point rating scales is completed by the subject and an ordination score is calculated for each construct by multiplying the number of different ratings made on that construct by the range of the ratings. Average ordination scores are calculated for constructs and elements separately and the results summed to give an overall ordination score. Landfield (1977) reports that the ordination score is not significantly related to the FIC score.

Most of the measures discussed in this chapter provide a single figure as an indication of the nature of the organisation of an individual's construct system. Yet such a procedure may mask important differences between systems which are equally 'complex'. Bannister and Mair (1968), in discussing the low reliability of the Intensity measure put the point thus:

'the reliability of this type of global measure of structure is likely to be low since it is a patently compound measure. For example, a middle-range Intensity score could reflect a matrix with one large cluster plus a number of residual independent clusters, or two moderate clusters, or one cluster of middle-value correlations.' (p.161)

This statement could refer to any of the organisational indices derived from repertory grids (though the situation is particularly clear in the case of the FIC score), and indicates that while such

constructs as the degree of differentiation and integration may be abstracted from personal construct systems, there still remains much information which cannot be reduced to a purely organisational analysis but requires that both content and structure be analysed together as in the procedures introduced by Hinkle, to be discussed in the next chapter.

The measures reviewed in this chapter do appear to reveal some information about the organisation of a particular construct system. However the conceptualization of this information is problematic and studies of the relationships between such measures and less purely organisational aspects of construct systems revealed by grids is required. What seems to be clear is that cognitive complexity, however assessed, is a gross indicator of differences between construct systems and that different measures may be differentially affected by different aspects of the construct systems such as degree of integration and differentiation. However such measures will remain useful until more sophisticated indices are developed, and while they continue to be related to other aspects of construing such as effective role-playing.

CHAPTER FIVE

EXTREME RESPONDING, MEANINGFULNESS AND THE

CONSTRUCT OF SUPERORDINACY

In this chapter will be discussed measures of the relative superordinacy of constructs within an individual's personal construct system. The first section deals with research into extremity of response as an index of meaningfulness, while the second discusses the work of Hinkle (1965) and the extensions to Kelly's theory and methods made by him. Finally the relationship between these two areas and the concepts involved will be considered.

Extreme Responding and Meaningfulness

Polarisation of judgemental responses has traditionally been viewed in two ways (O'Donovan 1965); firstly, as a generalised response style associated with certain personality characteristics and psychopathology (e.g. Hamilton 1968), and secondly, as an indication of the meaningfulness, to the subject, of the judgement he is making. The second of these two constructions may be derived from Personal Construct Theory and, in particular, from the position, taken by Kelly, that constructs are dichotomous (Landfield 1968; Lemon and Warren 1974). Kelly himself provides the basis of the later developments of the extremity response as an indicator of meaningfulness when he states, in respect of constructs provided to a subject, that 'the less the subject feels that he understands what the experimenter has in mind, the more he will hug some point on the scale, such as the middle, which seems to commit him the

least ... when ... the rater understands the prescribed construct well enough ... [he will] make dichotomous ratings (Kelly 1955, p.144). To the extent that extreme responding indicates dichotomous responding it can therefore be used as a measure of meaningfulness.

A number of studies have tested the hypothesis that elicited constructs are more meaningful than supplied constructs by comparing extremity of ratings on the two types of construct. Cromwell and Caldwell (1962) elicited six constructs from each of their subjects, who then provided brief definitions of these constructs. Ratings of elements not used in the original elicitation procedure were more extreme when they were made on a subjects own constructs than when they were made on constructs elicited from another subject, despite the provision of the definitions of these provided constructs. Landfield (1965) found that clients ratings of present self and ideal self were more extreme on their own than on the constructs of their therapists; further there was greater extremity of rating on constructs ranked as more useful in describing others, than on constructs ranked as less useful in this respect. Bender (1968) obtained similar results when he found that subjects' ratings on their own constructs were more extreme than their ratings on constructs extracted from the grids of their best friend, their girl or boy friend, and a disliked acquaintance.

The above studies have compared ratings on personal constructs with ratings on the constructs of others. Other studies have compared personal constructs with generalized personality constructs. Isaacson and Landfield (1965) showed that self ratings were more extreme on personal constructs than on scales derived from the Butler-Haigh Q Sort statements. Isaacson (1966, reported in Landfield 1968)

found that subjects ranked personal constructs as more useful in understanding people than Semantic Differential dimensions and dimensions derived from items of the Manifest Anxiety Scale. Subjects were more extreme in their ratings on personal constructs and they also indicated greater certainty in ratings on these personal dimensions than on the provided ones. Bonarius (1971) reports a number of experiments which support these findings: subjects ratings on their own personal constructs were, in general, more extreme than when they were using personal constructs elicited from another subject or provided by the experimenter. Two exceptions to this 'robust' (Bonarius 1971) finding are reported by Warr and Coffman (1970) and by Kuusinen and Nystedt (1975b).

Warr and Coffman (1970, experiment III) found no difference in terms of extremity response between subjects ratings on twelve elicited constructs and on twelve provided constructs. They conclude that it is possible to provide subjects with constructs which are, on the whole, as personally relevant as elicited constructs. Kuusinen and Nystedt (1975b), in Sweden, found that while ratings on subjects own constructs were more extreme than their ratings using provided 'personality differential' scales, they were no more extreme than when provided semantic differential scales were used. This study also seems to support the view that provided constructs can be as meaningful to a subject as his constructs. Bender (1974) has challenged Warr and Coffman's (1970) findings on the grounds that the sequential procedure adopted by the latter to elicit constructs tends to produce less meaningful constructs. In this procedure only one element is changed from one sort to the next; a procedure which, Bender showed, produces

constructs with relatively low loadings on the principal component of the grid as compared to constructs elicited from triads containing two 'fresh' elements. While this explanation is very plausible it would be more convincing if it had been shown that constructs elicited using the sequential procedure provoked less extreme responses than other constructs. Kuusinen and Nystedt (1975b) did not make use of the sequential procedure and so their results cannot be explained away in this fashion. However there is another possible explanation. In both of the studies under consideration subjects were presented with a Repertory Grid followed by a set of provided Semantic Differential results. The subjects were thus faced with two similar but different tasks. In the studies reported above which did find evidence for greater extremity of rating when using elicited constructs there was no clear-cut distinction between tasks. Rather the subjects were usually faced with a mixed set of scales and thus only one task. It may be that subjects adjust the extremity of ratings to reflect differences in meaning within a given set of ratings but not between sets.

It seems then that extremity of rating can be reliably used to differentiate between a subjects personal constructs and those emanating from another source. Differences in meaningfulness of constructs from the same source have also been studied. Mitsos (1961) presented his subjects with twenty one semantic differential scales consisting of seven scales representing each of the three main factors, evaluation, potency and activity. Subjects chose the most useful three scales from each factor and then rated seven concepts on all the scales. Ratings on those scales chosen as most useful were significantly more polarised than ratings on the other scales.

Tajfel and Wilkes (1964) linked extremity of rating to the 'salience' of the personal constructs on which the ratings were being made. They assessed salience by assuming that salient constructs would be those elicited most frequently and earliest from their subjects in a free response task (describing the characteristics of men depicted in photographs). From a large number of descriptions provided by each subject, content clustering techniques were used to identify the subjects personal constructs and their relative salience. Rating scales were then produced for each subject: these were made up of his four most salient constructs and his four least salient constructs. New photographs were rated on these scales and it was found that ratings on the more salient constructs were more extreme than on the less salient constructs, though the difference was mainly due to ratings at the unfavourable end of the scales. Tajfel and Wilkes went on to show that their measure of salience significantly predicted subjects judgements as to how 'important in a person' particular attributes are.

Bonarius (1971) reports three studies in which subjects rated others on a set of scales provided by the experimenter. In two of these studies, ratings on the scales representing constructs which the subject judged to be more useful in describing others were more extreme than on constructs judged to be less useful. The negative findings of the third study can probably be explained in terms of the fact that the number of scales used was small, and that the scales had been carefully chosen to be relevant to the subjects (business managers). Other studies by Bannister and Salmon (1967) and Bender (1969) will be discussed later in this chapter.

Overall the results of studies of the extremity of rating in relation to meaningfulness are so consistent that they have led Bonarius (1971) into claiming the existence of a 'Construct Law' which states that ratings on personal constructs will be more extreme than on any kind of supplied construct. He has gone further and claimed that there is weaker support for an 'Object Law' such that ratings of people with whom the subject feels a personal involvement or attraction will be more extreme than ratings of acquaintances with whom the subject is less involved. Bonarius obtained this result in a number of studies. Warr and Coffman (1970) obtained a correlation of 0.83 between extremity of rating and the judged importance of the concepts being rated. Landfield (1971) found that the meaningfulness, as indicated by extremity of rating, of the other in therapist/client dyads at the beginning of therapy was a significant predictor of whether therapy would run its full course or would terminate prematurely.

Bonarius (1971) has shown that the importance of constructs and the importance of elements may interact, with the result that the difference between more important and less useful constructs in terms of rating extremity is particularly great when more important elements are being rated. He has gone on to incorporate this finding in his 'Interaction Model' in which 'extremity of ratings is not the characteristic of certain people as compared to others, or of certain rating tasks as compared to others, but rather of the kind of relation between the components of the rating' (Bonarius 1971, p.102). These components are the judge, the constructs and the elements being rated. If 'proper relations' exist between these three components then extreme ratings will result. Bonarius (1977) presents a summary of

the model and introduces a modification of repertory grid techniques which can be seen as following from an extension of the model into the area of interpersonal communication. The technique involves two subjects completing grids simultaneously and interactively; little work has been done however and the method will not be considered here.

More central to the present chapter is the view that rating extremity, being an indication of meaningfulness, is therefore also an indication of the hierarchical organisation of the construct system, for 'hierarchical organization presumes levels of meaningfulness' (Landfield 1968, p.138). There is a suggestion here then that rating extremity is related to the relative superordinacy of the constructs on which the ratings are being made. This point will be followed up after the next section. For the moment it is enough to note once again the highly reliable findings that rating extremity is related to the perceived usefulness of the constructs concerned and to the degree of involvement of the subject with the elements being rated. Considered in conjunction with Kelly's Dichotomy Corollary these findings imply that the meaningfulness of a rating task to a subject may be reflected in degree of rating extremity.

Construct Implications and the Measurement of Superordinacy

The work of Hinkle (1965; summarised in Bannister and Mair 1968), though unpublished, provides perhaps the major development to have taken place in personal construct theory and method since Kelly's original presentation of his ideas. Like Kelly, Hinkle was concerned mainly with change in personal construct systems: a concern which

inevitably involved the question of system organisation (c.f. Levy 1956). Central to Hinkle's approach was his view that construct systems could profitably be considered as hierarchical implicative networks in which each individual construct is defined in terms of its location i.e. in terms of its implicative relations with other constructs. The form of these implicative links between constructs can vary; Hinkle suggests the following are the most common forms which may exist between two constructs, A-B and X-Y:

- '(1) Parallel: A implies X and B implies Y (e.g. love-hate; pleasantness-unpleasantness).
- (2) Orthogonal: A implies X, but B does not imply Y; also A implies X and B implies X, but neither implies Y (e.g. employed-unemployed; has income - has no income). Also good-bad; evaluative-objective.
- (3) Reciprocal: A implies X and B implies Y and X implies A and Y implies B (e.g. nervous-calm; tense-relaxed). This ... suggests a functional equivalence of the construct labels ...
- (4) Ambiguous: A and B imply X, and B implies Y; also A implies X and Y, and B implies X and Y.'

(Hinkle 1965, p.18).

Repertory grid methods could not be used to distinguish between these forms of relationships and Hinkle developed his own technique for doing so: the Implication Grid (or Impgrid), to be discussed below. First, however, must be described the technique Hinkle devised for eliciting superordinate constructs. He defines subordinate constructs are those which have implications for superordinate constructs, while superordinate constructs are those whose polar positions are implied by their subordinate constructs. In general, then, the line of implication in the hierarchical system is upwards,

with all constructs, except those at the very top and bottom of the hierarchy, being both subordinate and superordinate to other different constructs. Constructs relatively low in the hierarchy will have a greater number of superordinate implications than subordinate implications, while the reverse is true for constructs relatively high in the construct hierarchy.

Hinkle's technique for the elicitation of superordinate constructs he termed 'laddering'. Although he concentrated on core-role construing, on constructs applied to 'self', the technique need not be limited in this way. Hinkle elicited ten subordinate constructs from each of his subjects using the traditional triad method but including 'self' as one of the elements in each sort. Subjects then indicated which pole of each construct described the kind of person they would prefer to be. The laddering technique essentially consists of asking the subject why he would prefer to be described by one pole of a construct rather than another. In reply the subject gives another construct e.g. 'Subject 4 ... said that he preferred to be reserved in contrast to emotional, because being reserved implied being relaxed while emotional implied being nervous' (op.cit. p.33, emphasis added). The question is then repeated for the construct given in reply to the first question, and so on up the hierarchy until the subject can no longer generate a new construct. In this way Hinkle elicited ten superordinate constructs from each of his subjects.

The twenty constructs now obtained for each subject were entered into an Impgrid. This involves the subject in directly comparing every pair of constructs twice and indicating the implicative relation between them; only the parallel and reciprocal forms could be considered using the method used by Hinkle. This method consisted of taking

each construct in turn and asking subjects to indicate which of their other constructs they would change on given that they had changed from one pole of pivot construct to the other. In other words subjects were asked to indicate the implications of their changing back and forth on just one construct. The number of ^{super-}~~sub~~ordinate implications could then be calculated by totting up the number of times a subject indicated that a change on that construct would lead to a change on another construct. Conversely the number of ^{sub-}~~super~~-ordinate implications of a construct is the number of times a change on it is implied by a change on another construct.

The hypotheses to be tested using the above methods were that superordinate constructs, as elicited by the laddering technique, would have a larger range of both subordinate and superordinate implications than would subordinate constructs. It is clear that, by definition, superordinate constructs should have a larger range of subordinate implications but it is not clear that they should have a larger range of superordinate implications. Hinkle modifies his hypothesis by stating that constructs at the highest level of superordination in a hierarchy would not be expected to have a large range of superordinate implications. It can only follow that Hinkle does not consider his 'superordinate' constructs to be at this highest level; an honour which is presumably awarded to those constructs with which the individual monitors' his own construing. However Hinkle is not explicit on this point, and he does not analyse his data in such a way that the most superordinate constructs in the sample of each subjects constructs can be separated out for comparison with lower level 'superordinate' constructs. Both hypotheses were supported. Superordinate constructs had almost 18 per cent more superordinate

implications than subordinate constructs, and almost 19 per cent more subordinate implications (both results being highly statistically significant).

The third technique introduced by Hinkle was the resistance to change grid. In this grid the procedure is that every construct is paired with every other construct, and for each pair the subject is told to imagine that he has to change from the preferred side to the unpreferred side of one of the constructs. He then has to indicate which of the two constructs he would prefer to remain the same on. In this way a subject's constructs can be rank ordered in terms of their overall degree of resistance to change. Hinkle hypothesised that superordinate constructs would be more resistant; the reasoning for this hypothesis being as follows. The individual, being in motion, attempts to move in the directions which he anticipates will maximise the 'total number of predictive implications in ... [his] ... personal implicative network' (p.21). This direction may be one in which the network is either extended or further defined; 'a person always chooses in that direction which he anticipates will increase the total meaning and significance of his life ... [and] ... to avoid the anxiety of chaos and the despair of absolute certainty' (p.21). Since each person is attempting to increase the total number of implications in his system it is threatening for an individual to be faced with an 'awareness of an imminent comprehensive reduction' in this number. Similarly it will make him anxious if he becomes aware of a relative absence of implications in a particular area. Since superordinate constructs have a broader range of implications than subordinate constructs, it follows that change on such constructs will be more threatening or anxiety provoking than change at a more subordinate level. Changes in construing at superordinate levels ought, therefore, to be more highly resisted.

Again the results were in support of the hypothesis. For the group as a whole there was a highly significant correlation of 0.59 between the relative resistance to change of a construct and its threat provoking potential as assessed by its number of superordinate implications. This finding was reflected in a comparison of the superordinate and subordinate constructs which revealed that the former were far more resistant to change.

It seems, then, that Hinkle may have clarified certain aspects of Personal Construct Theory (he re-defines terms other than those mentioned here) and certainly the techniques he has introduced have some advantages over traditional repertory grid technique such as, for example, the distinction between constructs and elements not being necessary and the fact that Hinkle's techniques involve the subject in making direct rather than indirect comparisons between his constructs. Other studies have used these techniques with profit.

Fransella (1972) in her study of stutterers used laddering to elicit constructs which were then compared in a modified Impgrid. Fransella found that the original procedure used by Hinkle was too difficult for her subjects who were of a wide range of intellectual ability. She therefore devised a 'Bi-polar Impgrid' in which the two poles of each construct are treated separately and the subject is asked to indicate the implications of having, for example, a strong personality and also asked for the implications of having a weak personality. Such a grid has an advantage in that 'orthogonal' forms of implicative relationship can be revealed. Each subject in this study completed two types of Impgrid on a number of occasions as therapy progressed. The difference between the two types was that one grid was based on the subject's construing of 'me as others see me when I am not stuttering' (NS grids) and other on the subjects construing of 'me

as others see me when I am stuttering' (S grids). At the beginning of therapy the number of implications for 'stutterer' (S) grids was significantly higher than the number of implications for 'non-stutterer' (NS) grids. However as therapy progressed the number of S-grid implications dropped while the number of NS-grid implications rose. This latter change was particularly significant for superordinate constructs. Further there was a significant relationship between the increase in number of non-stutter implications and improvement over time. Overall the results support Fransella's contention, derived from Kelly's theory, that 'a person stutters because he knows how to do it'. i.e. while he knows how to relate to others as a stutterer the role of non-stutterer is a mystery to him - it is only after this role has become meaningful that he will behave accordingly.

Other studies have also concentrated on the Impgrid. Crockett and Meisl (1974) looked at the relationship between construct organisation and degree of change in construing in response to invalidation (c.f. Levy 1956). Using an Impgrid in order to assess overall construct connectedness they found that this was positively related to the extent of change after strong disconfirmation but negatively related after only weak disconfirmation of subjects predictions. The authors explain this in terms of a proposed reluctance of subjects to change their construing if this will entail fairly widespread change, as it will do if constructs are highly connected; direct disconfirmation of the most 'central' construct, however, necessitates such change.

Coleman (1975) related Impgrid measures to degree of interest in 'personal' or 'non-personal' activities (Little 1968). His subjects

completed two Impgrids, one in which the constructs referred to themselves and one in which they referred to others. For both grids separately the total number of implications present was significantly related to interest in personal activities but not to interest in non-personal activities; a finding which is reminiscent of those of Fransella and suggests again that the total number of implications in a particular Impgrid may reflect the 'meaningfulness' of construing in the area involved.

Evidence for the usefulness of Impgrid methods is presented in only a few studies but already there is evidence that Impgrids may be more reliable and reflect construct bi-polarity to a greater extent than Repgrids (Honess 1978). What is of more concern here however is the significance of the ideas and techniques introduced by Hinkle for the assessment of meaningfulness and superordinacy: topics which will be dealt with in the next sections.

Meaningfulness and Superordinacy

While 'superordinacy' is given an explicit definition by Kelly, 'meaningfulness' is not; the relationship between the two constructs is, therefore, somewhat problematical. Landfield (1968; 1977) has argued that since 'hierarchical organisation presumes levels of meaningfulness' superordinate constructs are more meaningful than subordinate constructs. His measure of 'ordination' is derived from this point for it is partly based on extremity of rating which is construed as an indicator of meaningfulness. Hinkle (1965) provides a theoretical justification for the linkage of the two concepts in his restatement of the Choice Corollary:

'a person chooses for himself that alternative is a dichotomized construct through which he anticipates the greater possibility for increasing the total number of implications of his system'. (p.21)

For Hinkle, then, the quest for improved prediction or anticipation of events (for greater meaningfulness we might say) involves the maximisation of the number of implications within the system.

Since, by definition, superordinate constructs carry more implicative weight than subordinate constructs they should also be more meaningful, and any measure of meaningfulness should, therefore, also reflect degree of superordinacy.

Two points arise here: firstly, how adequate is Hinkle's conceptualisation of meaningfulness, and, secondly, do constructs identified as being relatively superordinate produce more extreme ratings than relatively subordinate constructs? The second point will be dealt with first: only two studies (Bannister and Salmon 1967; Bender 1969) have, as far as the present writer is aware, correlated measures of rating extremity with degree of superordinacy as assessed by Hinkle's methods. In a small scale study involving ten subjects Bannister and Salmon (1967) compared ten 'superordinacy' measures. Among these were a resistance to change measure, derived directly from Hinkle (1965), and a measure of rating extremity which involved adding-up the number of the most extreme responses, on a six point scale, made on any particular construct. These two measures were found to be unrelated for the group as a whole. The authors also attempted to derive a measure using the 'laddering' technique based upon the number of 'steps' required to reach the top of the hierarchy from any particular construct. For a number of reasons they regarded

this as their weakest measure and it was uncorrelated with any of the other measures. Bender (1969) did obtain a finding of a significant relationship between the relative resistance to change of a construct and the extremity of the ratings made on it. For each of his subjects the five most resistant to change, and the five least resistant out of a sample of 15 constructs were identified. Ratings of six other people known to the subject were found to cover a wider range on the five most important constructs than on the least important constructs. When 'self' ratings only were considered then the same result was obtained using the more usual extremity measure of absolute distance from the mid-point of the scale.

The two studies seem to provide somewhat contradictory results with Bannister and Salmon finding that resistance to change was unrelated to extremity of rating, and Bender obtaining a significant relationship between them. The major difference between the two studies lies in the measures of extremity rating used. The measure adopted by Bannister and Salmon, that of simply counting the number of times the end-points of a rating scale are used, makes use of relatively little information and may, therefore, fail to adequately discriminate between constructs. That the measure may not be entirely appropriate is suggested by the finding in this study that it was uncorrelated with subjects' own judgements of construct importance, a finding which is in contradiction to those reported in the studies discussed in the opening section of this chapter.

While Bender does provide evidence for the possible utility of rating extremity as an index of superordinacy, his findings may not be seen as totally convincing. He found a relationship between extremity of response and resistance to change (superordinacy) only when self-ratings were considered. For ratings of others he reports

that the range of ratings was related to superordinacy but does not report the corresponding data for the more usual distance from the mid-point measure. It can only be assumed the the relationship between this measure and superordinacy was non-significant, which seems to suggest that rating extremity may only weakly reflect superordinacy. However the finding may be explained on theoretical grounds. Bender has assumed that the resistance to change grid has identified a subject's most 'important' and his least 'important' constructs, but in so doing has ignored the importance of context. Kelly stresses that constructs which are superordinate in one context may be subordinate in another, and it may well be that the hierarchical organization of self-constructions is rather different for some subjects from the organization of the constructs with which they construe other people. If this were the case then the resistance to change technique used by Hinkle would not be accurately tapping degrees of superordinacy in the construing of others, and therefore a strong relationship with rating extremity would not be expected. The usefulness of this suggestion could be tested by having subjects complete two resistance to change grids: one involving self-construction and the second involving the construing of others. The rank order of constructs deriving from each grid could then be compared.

The empirical evidence for the use of rating extremity as an index of superordinacy is therefore equivocal. What of the theoretical basis for the relationship between superordinacy and meaningfulness provided by Hinkle? Firstly, there is some empirical evidence for this formulation; the studies of Fransella (1972) and Coleman (1975) both found that the number of implications within an individual's construct system was related to the supposed meaningfulness of the area being construed. However, Honess (1979) argues that to equate total number of implications

with meaningfulness is 'clearly absurd [since] the limiting case of every construct implying every other construct would render meaningless any attempt to anticipate events'. This argument is based upon Honess' view of the total number of implications in a system being an inverse measure of differentiation. A system in which the number of implications was maximal would, therefore, be totally undifferentiated (i.e. 'simple') thus making predictions impossible to evaluate.

A number of points arise from this criticism. Firstly, Hinkle's techniques are usually thought of as providing information about the hierarchical integration of a system, rather than about its degree of differentiation (e.g. Fransella and Bannister 1977). Yet Honess claims that total number of implications is an index of differentiation and he attacks Kelsall and Strongman (1978) for suggesting that while a low number of implications reflects high differentiation, a high number reflects high integration. He claims that there is 'no justification for this proposition. Different theoretical analyses converge in assuming that 'differentiation' and 'integration' are closely related but independent concepts.' This is not a convincing argument; it neglects the 'impurity' which may be present in any measurement, and there are good grounds for assuming that the number of implications within an Impgrid, like the various structural measures derived from Repgrids, may be an index of both integration and differentiation. Consider, for example, the construct systems of two individuals in which there are an equal number of implications. This does not mean that the two systems are necessarily structurally similar: one may be highly integrated consisting of essentially one very tightly woven system, while the other may be

more diffuse consisting of a number of small and fairly distinct sub-systems. Here, despite their similar scores the individuals differ in terms of both integration and differentiation. In other words the total number of implications does not totally determine the pattern of construct interrelationships.

Yet in some ways a totally interrelated system in which every construct implies every other smacks of simplicity rather than complexity, and indeed almost of obsessionality (c.f. Makhoul-Norris et al 1970), so to what extent can such a system be put forward, as it is by Hinkle, as that towards which man attempts to move? The solution lies in the introduction of another limiting case; that in which man fully understands the universe. In this case, since the universe is assumed to be integral (Kelly 1955, p.6) then man's construct system must also be integral i.e. all constructs must be in relationship with one another. So, to the extent that the Choice Corollary expresses Kelly's belief in the advance of man-the-scientist, Hinkle's restatement of it is both consistent with Kelly's position and logically coherent. Where, perhaps, it does require greater clarification is in the inclusion of extension of the system as a way of increasing the number of implicative relationships. Since Hinkle dealt only with slot change, from one pole of a construct to another, and not with shift change, from one construct to another, or with the development of new constructs, his emphasis was on (re) definition rather than extension. It is only if increasing the total number of implications in the system is equated always with definition, rather than extension, that Honess' points are justified.

It is concluded then that Hinkle's equation of meaningfulness with total number of implications is not 'clearly absurd' but is of

some value, diminished mainly by the use of a single figure to characterise the structure of the system, which inevitably leads to oversimplification and the glossing over of important differences in the implicative pattern. It follows therefore that superordinate constructs, having more implicative potential, will be more meaningful, which suggests that, since extremity of rating seems to be a useful measure of meaningfulness, it should also reflect degree of superordinacy. The evidence for or against this is inconclusive however.

Other Measures of Superordinacy

A number of measures of superordinacy have been suggested and a brief review of these will be given. All of them seem to tap an important aspect of an individual's system but, as will be seen, it is not always clear that this aspect is superordinacy. Therefore the chapter will end with a discussion of this and related constructs, and how and whether they may be differentiated.

Factor Loadings

Although Kelly stressed that the factors derivable from a repertory grid had no psychological reality but merely provided a short-hand representation of the relationships within the grid, such factors have sometimes been taken as representative of superordinate constructs which subsume the constructs which load on that factor. Alternatively it has been assumed that the constructs which load most highly on the first factor are more salient or superordinate than constructs with lower loadings on this factor. The reasoning behind this latter assumption is straightforward and is related to Hinkle's definition of superordinacy: constructs with high loadings on a principal component, say, are those which are most highly related

to other constructs and which, therefore, are more meaningful i.e. they have a greater number of implications attached to them (e.g. Bannister and Salmon 1967; Bender 1974; Cantor 1976; Green and Cochran 1978).

Variance Measure

The greater the variance of ratings on a particular construct then, it can be argued, the more meaningful is the construct and therefore the more superordinate. Ryle (1975) used Slater's DELTA program for comparing grids with the same constructs and elements, and showed that when subjects completed two such grids, at an interval of between 12 and 20 months, those constructs which accounted for a high percentage of variance in the first grid were more stable (or resistant to change) than were constructs which accounted for little of the variance.

Range of Convenience

On the basis of a hierarchical model of construct organization it would be expected that constructs higher up the order (i.e. superordinate) should have a wider range of convenience than the constructs which they subsume (Bannister and Salmon 1967). These authors found, however, that there was no relationship between a construct's range of convenience and its degree of interrelationship with other constructs in the grid. In contrast Bender (1969) did find that when using his most important constructs, as determined by the resistance to change technique, a subject was less likely to use the 'non-applicable' category, than when using his less important constructs.

Lopsidedness

The tendency for subjects to distribute elements unequally between the two poles of a construct has recently come to be viewed as meaningful rather than a source of error (Benjafield and Adams-Webber 1976). To the extent that elements assigned to the non-preferred pole of a construct stand out as 'figures' against the 'ground' provided by the elements allotted to the preferred pole, it may be hypothesised that subjects will prefer to use constructs which allow maximal figure/ground distinction. Adams-Webber and Benjafield (1973) obtained significant relationships between lopsidedness and subject preference and between lopsidedness and extremity of rating. However Bannister and Salmon (1967) did not find any relationship between lopsidedness and other superordinacy measures, including personal preference and the picture is further complicated by Applebee's (1976) finding that lopsidedness in construct use decreases with age. No studies have linked relative superordinacy to the 'golden section' hypothesis of Benjafield and Adams-Webber (1976) which posits that the proportion of elements allotted to the nominal pole of a construct should be about 62 per cent, in order for the other elements to appear as a maximally striking 'figure'.

Salience

In the study of Tajfel and Wilkes (1964) described earlier it was found that 'salient' constructs produced more extreme ratings and were judged as more important by subjects than less salient constructs. Salience was assessed in terms of the frequency and earliness of occurrence of a particular construct in a set of free descriptions. Lemon and Warren (1974) hypothesised that salient constructs are more

important to the individual partly because they 'allow more effective inferences to other traits'. In other words, and in the language of implicit personality theorists, salient constructs are more 'central'. (c.f. Asch 1946; Bruner et al 1958; Hays 1958; Warr and Knapper 1968).

Lemon and Warren tested this hypothesis by having their subjects make inferences from their constructs to a set of 15 provided traits, and vice-versa. Salient constructs were found to lead to more definite inferences than did non-salient traits. They also had significantly stronger implications for the provided traits than the provided traits had for them; this was not so for the non-salient constructs. Since the definition of 'centrality' used here is the opposite, in terms of direction of implications, of that given to 'superordinacy' by Hinkle these results have important theoretical implications and the study will be returned to in the discussion below.

Ordinacy

This measure of overall integration of a construct system introduced by Landfield and Barr (1976; Landfield 1977), and discussed in the last chapter, involves the calculation of a separate ordinacy score for each construct. Though this has not been used to distinguish between individual constructs within a system there seems no reason why the measure should not be used in this way.

Conclusion: The Construct of Superordinacy-Subordinacy

Of all the constructs which Kelly defined in his theory as being useful in the understanding of construct systems, superordinacy-subordinacy has perhaps received the most attention. This is not surprising given that the most common way of construing hierarchies is in terms of more important - less important, with those elements at the top of the hierarchy being allotted to the 'more important' pole. Further other diagnostic constructs such as core-peripheral can be subsumed by the ordinacy construct, such that core constructs will be relatively more superordinate than peripheral constructs. Thus the construct superordinate-subordinate is itself one of the more superordinate constructs in Kelly's diagnostic construct system.

The rich abstraction of Kelly's theorizing is not easily realizable in a concrete way, however, and attempts to develop measures of superordinacy have reflected these difficulties. Thus, for example, attempts to measure superordinacy using repertory grid techniques have tended to be based on the assumption that the more important a construct is within an individual's system then the more highly interrelated it will be with other constructs. However, Bannister and Salmon (1967), in their comparison of ten potentially useful measures of superordinacy, found that two main clusters could be derived from their correlation matrix. One contained only two measures, those which reflected 'the subjects' more or less conscious ordering' of the constructs, i.e. resistance to change, and perceived importance. Unrelated to this cluster was that which contained those measures, derivable from repertory grids, which reflected the degree to which any particular construct was related to other constructs e.g. loadings on the first principal component; degree of relationship with the most important construct.

Although the study of Bannister and Salmon needs to be repeated, the somewhat oversimplified account of the findings given here is at least suggestive. Firstly the extent to which a construct is related to other constructs is not clearly derivative from Kelly's theory as a measure of superordinacy, and, as illustrated in the work on cognitive complexity, has been used as an index of constellatoriness (c.f. Levy 1956; Edwards and Bennion 1974). Highly related constructs may be at the same level of the construct hierarchy and not, therefore, in subordinate-superordinate relations with one another. Hinkle's Impgrid has an important advantage over the Repgrid in this respect for it can indicate the direction of implication, the feature which defines relative level of superordinacy in his version of Personal Construct Theory. The extent to which repertory grid measures of degree of relationship of constructs reflects superordinacy may differ from individual to individual depending on other aspects of their construct systems. Certainly Bannister and Salmon (1967) found quite wide individual differences in the extent to which various measures correlated.

In the case of correlations between grid measures and the perceived importance of his constructs to the subject, a different interpretation of those individual differences can be made. In deciding on the relative importance of his constructs the subject is in fact making use of a superordinate construct which subsumes the previously elicited constructs. It is, however, a superordinate construct of a particular kind i.e. it is not one which is simply a more general version of the constructs subordinate to it, as in a hierarchy of concepts, but is one through the use of which the person

anticipates his own construct system. This distinction is not as clear as Ryle (1975), for example, has claimed but it is a useful one which underlines the fact that construct system construing of this type has been little studied. It is likely that individuals differ greatly in their construction of their own systems and this may explain, for example, why Bannister and Salmon obtained correlations of between -0.398 and 0.524 for different subjects when loading on first principal component was correlated with perceived importance. People presumably differ in their ability to anticipate their own constructions as well as in terms of the constructs they use for this process.

Hinkle (1965) has made the interesting suggestion that constellatoriness and propositionality, rather than being construed as properties of constructs, may each be successfully viewed as 'a superordinate statement about the probable utility of a given implicative network'. An individual will construe in a propositional way if he anticipates that this will, eventually, lead to a total implicative gain. However this suggestion has been relatively overlooked and little, if any, work has stemmed from it again reflecting the extent to which construct system construing has been ignored. The reasons for this lack of research interest probably lies in the difficulty of getting at the relevant constructs, particularly in a respectably 'scientific' way.

Although the methods introduced by Hinkle have been used relatively little the available evidence suggests that they have great potential, especially in so far as the operations which Hinkle uses derive directly from his modified version of Kelly's theory. Certainly this is true to a greater extent than measures based on

Repgrids which, as pointed out above, are often not so tightly linked with theory (c.f. Fransella and Bannister 1977). However a problem with Hinkle's conceptualisation of superordinacy lies in its relationship to the concept of 'centrality'. In Hinkle's theory a superordinate construct is one with relatively many subordinate implications i.e. it is implied by relatively many other constructs. A 'central' trait, however, is one from which relatively many strong inferences can be drawn (c.f. Hays 1958) i.e. thus suggesting that it has relatively extensive superordinate implications. Operationally Hinkle defined superordinate constructs in terms of number of both subordinate and superordinate implications, a procedure which he does not provide an entirely satisfactory justification for, but, more importantly, the findings of Lemon and Warren (1974) that salient constructs can be differentiated from non-salient constructs in terms of the extent to which they have non-reciprocal implications for other traits, suggests that Hinkle's emphasis on subordinate implications as defining superordinacy may be misguided. However, even granting the assumption that salience is related to superordinacy, there are reasons why this inference need not be accepted.

Firstly the measure used in the Lemon and Warren study is not number of implications but rather strength of inference, and these, though related, may not be interchangeable. Secondly, and most importantly from a Kellian perspective, the dichotomous nature of construing is ignored by Lemon and Warren. Thus strength of inference is scored on a scale from 0 to 10 for each comparison made. An inference that because a person is X then he is certainly Y is given a score of 10; an inference that a person who is X is certainly not Y

is given a score of zero. From a Kellian viewpoint this is nonsense for the inferences are equally strong; from this viewpoint a score of zero should be given when a judgement intermediate between these two is made for this is the point of uncertainty, where no inference is being drawn. A replication of this study which did take the Dichotomy Corollary into account would be most valuable in clarifying the relationship between centrality and superordinacy.

The organisation of personal construct systems, and the construct of superordinacy, is a key aspect of Personal Construct Theory. Repertory grids have been used successfully to tap construct system organization, but, as has been shown in this and the previous chapter, the meaning of many, seemingly interesting, measures derivable from grids is unclear. Hinkle has developed methods for the assessment of superordinacy and, in so doing, has clarified certain aspects of Personal Construct Theory. In order to derive totally meaningful indices from grids then theoretical analysis of the sort formulated by Hinkle is required; however a start could be made by studies in which the pattern of construct relationships derived from repertory grids is compared with the patterns arising from the use of Hinkle's techniques (c.f. Bannister and Salmon 1967). Given that Bannister and Salmon found that their range of convenience measure formed the link between the two clusters of unrelated measures they obtained, and that extremity of rating seems reliably related to meaningfulness, it may be that these or the related 'ordination' measure (Landfield and Barr 1975) will prove to be key factors in any attempt to further extend the theoretical basis of superordinacy, and link it more closely to repertory grid results.

CHAPTER SIX

PERSONAL CONSTRUCTS AND INTERPERSONAL RELATIONSHIPS

In this chapter the measures and concepts described and discussed in the previous chapters will be considered in the light of research into interpersonal relationships. Very little research has been done in this area from a Kellian perspective, and, not surprisingly, much of this work has been concerned with psychotherapy. While such research may have implications for the study of friendship, and vice-versa (Dewhurst and Duck 1978), only the study of Landfield (1971) will be dealt with in any detail here. Interpersonal attraction has not received much attention from Kellians and, since the important work of Duck is reserved for a later chapter, few studies can therefore be reviewed here. The chapter begins, however, with a discussion and review of studies of interpersonal communication which can be related to Personal Construct Theory.

Communication and Commonality

Of the two corollaries in which Kelly deals explicitly with interpersonal relations, the Sociality Corollary most clearly states the necessary conditions for successful and meaningful human relationships:

'In order to play a constructive role in relation to another person one must not only, in some measure, see eye

to eye with him but must, in some measure, have an acceptance of him and of his way of seeing things.'

(Kelly 1955, p.95)

Two individuals may have similar construct systems yet, perhaps not realizing this, be unable to adequately understand one another. Conversely such understanding may be possible despite differences in the construing of two people, one or both may have superordinate constructs which can subsume the very different constructs of the other e.g. parent and child.

Although similarity of construing is not necessary for the development of a relationship it may still be important. Two people may be more likely to meet if they construe their experience in a similar way: they may be more likely to take the same job for example. Further, having met, their communication may be more successful if they share similar constructs; for communication, according to Kelly, involves the use of symbols (e.g. words) in the hope of eliciting 'parallel' constructs in another, and it seems a plausible hypothesis that such 'parallel' constructs are more forthcoming given an initial degree of similarity. This is especially the case given the seemingly widespread assumption of similarity which will affect the manner and extent of the communicator's expression of his message, thus making it likely that similarity will, in fact, be required for full understanding.

The overlap between the construct systems of two individuals may be construed and assessed in a number of different ways. Thus two individuals may disagree about the placement of elements along construct dimensions yet still agree about the relationships between constructs

(Bannister 1962); or they may use different words to describe the same construct, or the same words to describe different constructs (Thomas et al 1976). It is not surprising then that the studies to be reported here have used a number of different ways of assessing similarity.

A number of studies have tested the basic proposition that the communication between people will be more effective if they have similar ways of construing. Before going on to discuss the work of Landfield (1971) a number of studies which have looked at this problem from a non-Kellian theoretical perspective, while still being highly relevant to, or influenced by, Kelly's theory, will be discussed. Runkel (1956) and Menges (1969) used similar methods to investigate teacher-student communication. Using Coomb's unfolding technique they assessed the degree of 'co-linearity' between each student and his teacher; this measure indicates the degree to which two people make use of the same underlying dimension in their comparisons of certain elements, (in this case, of five statements relevant, in some degree, to the course involved). It was hypothesised that students who were co-linear with their teacher would obtain higher course marks than students who were not co-linear, despite their being no more intelligent and receiving the same marks in other courses. Runkel's data supported his hypothesis, and he went on to show that the relevant factor influencing marks was not agreement between teacher and student in their rank-ordering of the statements, but that they used the same dimension to order the statements. Menges, however, did not find that co-linearity was related to grades; he did find though that both the lecturer and his course were liked more by co-linear rather than non co-linear students. Why the two studies should have obtained different results in respect of 'academic

communication' is difficult to say, but Menges' use of only one lecturer may have influenced his results.

Triandis (1959) used rather different methods to assess the effects of cognitive structure similarity on communication effectiveness between supervisors and subordinates in an industrial setting. One of his measures of similarity, categoric similarity, was based on a content analysis of the constructs produced by subjects when completing a Reptest. The second measure, syndetic similarity, was a measure of agreement between two subjects in their ratings on semantic differential scales. Both communication effectiveness and liking of subordinate for supervisor, as assessed by scales, were significantly related to categoric similarity in the construing of people and syndetic similarity in the construing of jobs. Overall, syndetic similarity was more powerful in its effects than categoric similarity.

Triandis (1960a, b) adopted an experimental approach to interpersonal communication. In the first study subjects took part in a number of 'games' with another subject; the object of each game was for the pair to ascertain which of two pictures each had been given was common to them both. Their only means of communication was to pass each other messages, each of which consisted of a pair of polar opposites and a rating of one of the pictures in terms of these adjectives. The effectiveness of communication within a pair was assessed according to their degree of success at these games. Similarity of 'categorization' was assessed by a content analysis of the constructs elicited from subjects when presented with pictures, depicting various facial expressions, of the same kind used in the communication exercise. The constructs of every subject were each

compared with those of his partner and rated for their similarity. This measure of general 'attribute similarity' was supplemented by a similar measure of the similarity of the dimensions used by the members of a pair in the performance of the task. Although these two measures were not highly related ($p < .10$) it was found that both were significantly related to success.

The second study (Triandis 1960b) involved subjects in a rather different task, success on which was compared with three different measures of similarity. Each subject rated a number of concepts on semantic differential scales and, some weeks later, was given the completed scales of other subjects and was required to guess the concept which had been rated on a particular sheet. The three measures of similarity of cognitive structure were syndetic similarity, a measure of overall degree of agreement between subjects in their ratings; D-matrix similarity, based on the degree to which the subjects agreed in their grouping of the concepts within their semantic space; and symbaditic similarity, which, like Bannister's (e.g. 1962) 'consistency' score, assessed similarity of the inter-correlations between rating scales.

The results showed that only syndetic similarity was related to accuracy of decoding. This is not too surprising, however, given that information about the encoder's degree of symbaditic similarity and, particularly, of their D-matrix similarity was not available to the decoder who was presented with a large number of rating scale sheets, one at a time, in a random order and which had been completed by a number of different encoders. The subject was thus faced with a fresh task with each sheet, and while the set of ratings for one concept can indicate something about the encoder's degree of syndetic

similarity, little can be deduced about his level of symbiotic similarity and nothing at all about his D-matrix similarity. The results do not indicate therefore that these two measures of agreement are unimportant in interpersonal communication, merely that they have no effect in a situation in which they are not salient.

Overall, in the variety of measures used and the different contexts involved, the studies discussed above strongly support the hypothesis that some kinds of similarity of categorization between two individuals may aid communication between them. Thus both sophisticated statistical analysis of underlying dimensions of judgement (Runkel 1956) and content analysis of verbal descriptions (e.g. Triandis 1959; 1960a) indicate that the greater the degree of overlap between two individuals in terms of the constructs they employ then the more successful will be their communication, as it will be also if, when using the same constructs, they agree about the positioning of elements along the construct dimension (Triandis 1959; 1960b). That liking may follow from successful communication is suggested by the findings of Menges (1969) and Triandis (1959). It may be that, while interpersonal understanding is not sufficient for liking, most people do have a tendency to like those with whom they can best communicate. The work of Landfield (1971), however, provides a timely reminder that the maximal level of similarity required for successful role playing may not be the maximum possible.

Congruency and Psychotherapy

Since the basis of psychotherapy is a relationship, between therapist and client, it follows that the success of therapy will depend, to some extent, on the quality of this relationship. This implies that, just as people get on better with some people than with

others, therapists may have more success in working with some clients than with others who would perhaps find other therapists more helpful. If therapists and clients could be matched in some way then perhaps the overall degree of success in psychotherapy would rise. It was this possibility of therapist-client matching which formed a basis for Landfield's (1971) work.

In drawing out the implications of the Sociality and Commonality Corollaries for this question, Landfield came up with the following:

'(1) Although some degree of commonality between the construct systems of a client and his therapist is an underlying factor in developing lines of communication between them, the key to a successful relationship, i.e. improvement, is the ability of one or both members of a therapy dyad to encompass aspects of the construct system of the other person. (2) Highly similar client-therapist construct systems will not enhance the development of a successful relationship since encompassing some aspects of the other person's system involves an abstracting process which is impossible if two persons are highly similar in the ways they think.'

(1971, pp.17-18).

In other words Landfield is suggesting that while too little similarity may impede the initial communication process between two people, too much similarity may mean that their ability to stand back from, and to take an 'objective' view of, the other person's outlook will be limited. Landfield did not go on, however, to investigate the degree of similarity required for maximal therapeutic effectiveness; rather, he concentrated on the different kinds of construct system commonality which, he suggested, would be important in this respect.

The initial setting up of 'lines of communication' is facilitated, Landfield argues, by similarity in the content of the communicant's constructs. He hypothesises, therefore, that in therapist-client pairs in which there is more similarity in the content of their personal constructs therapy is less likely to conclude prematurely than it is in pairs in which there is less similarity. However, Landfield goes on, the fact that the therapist and client share certain concerns in their construing of people will be of little consequence for the prospects of improvement in the client. For improvement to take place the therapist must provide the client with 'methodological stimulation' to change; one area in which such change will be important is in 'the general ways in which a person goes about solving his problems'. Therapists whose constructs are organised in a different way from his own may provide a client with such stimulation, confronting, for example, a confused client with the possibilities of a similar, but more organised, way of viewing events. Thus the hypothesis to be tested was that improvement would be negatively related to congruency between therapist and client in the organization of their construct systems. It was also hypothesised that clients who improved would tend to converge with their therapists in terms of the degree of organization of their construct system.

The hypotheses were tested using a thirty two category system in order to analyse the content of the subject's personal constructs, and the F.I.C. score provided the measure of construct system organization. The research design was complex, involving eight therapists and a number of different groups of clients. Premature termination of therapy was defined by agreement between therapist and client that more remained to be done, and improvement was assessed by independent judges on the basis of pre- and post-therapy interview transcripts.

All of the above hypotheses were supported. Prematurely terminating clients were significantly less similar to their therapists in terms of construct content than were non prematurely terminating clients. This effect was strengthened if only constructs which were highly interrelated with other constructs were considered; constructs which, Landfield considers, are superordinate. Non-premature termination was also found to be related to congruence in the organization of the construct systems of therapist and client but, despite this finding, improvement in the non prematurely terminating clients was negatively related to such congruence. Moreover, improved clients showed a greater organisational convergence towards their therapist as therapy proceeded than did minimally improved clients.

This study adds further support to the proposal that construct system similarity between two people will aid their communication; it also indicates that, at least within the context of psychotherapy, similarity of construct content and of system organization may have different effects and, importantly, given that Duck makes a similar point in his model of developing relationships, similarity of construct content may have its effects at an earlier stage of a relationship than does similarity of construct system organization.

Interpersonal Understanding and Meaningfulness

There does seem to be fairly strong evidence that similarity in some aspects of their construing will enable two people to communicate more effectively. For Kelly, though, the important question is whether two people have an effective understanding of each other, i.e. whether they can each successfully construe the constructions of the other and thus play an effective role in relation

to each other. A number of studies have looked at this directly by assessing, for example, the accuracy with which a therapist can predict a client's responses on a repertory grid (e.g. Watson 1970; Rowe 1971; Smail 1972; Ryle 1975; Rowe and Slater 1976), or the understanding, assessed in the same way, that members of a group (Smail 1972) or of a couple (Ryle 1975) in psychotherapy may have for each other. Such research efforts reflect the concerns of theorists other than Kelly e.g. Rogers (1961); Laing et al (1966).

These studies will not be reviewed in detail here for their concerns are almost exclusively clinical and little of general theoretical interest has arisen from them though Ryle's finding that neurotic females were more and neurotic males less able to predict the grid responses of their partner is fascinating. Smail (1972) found that his measure of empathy correlated extremely highly with the rank orderings of the group, in terms of their understanding of the others, made by both the group members and the therapist. Empathy was also found to be related to a measure of 'thinking introversion'. Thus this study provides some evidence for the possible validity of the empathy measure used which makes the finding that it was significantly correlated with similarity, such that accuracy was increased when a similar other's ratings were being guessed, less indicative of an artifact (c.f. Cronbach 1955) and more suggestive of a genuine increase in the understanding of others due to the presence of similarity.

A rather different approach to the points expressed in the Sociality Corollary is that which has related the ability to construe another's constructs to the meaningfulness of these constructs to the role player (e.g. Landfield 1971). The measure of meaningfulness used in these studies has been rating extremity. In his study of therapist-client relationships, reported earlier, Landfield (1971)

hypothesised that premature termination of therapy would be less likely in those pairs in which, at the beginning of therapy, the therapist and client perceive each other as more meaningful, and also in those pairs in which each individual perceives the other's constructs as more meaningful. These hypotheses are based on the same reasoning that linked premature termination with dissimilarity in construct content i.e. that 'the early phase of a therapy relationship requires some minimal degree of shared meaningfulness' (p.66). No hypotheses relating improvement to such meaningfulness was made.

The hypotheses were tested by comparing premature terminators with non premature terminators in terms of the ratings client and therapist had made of each other after their first session. It was found that ratings of the therapist by the client and of the client by the therapist were significantly more extreme in the pairs in which therapy was carried to its full course, than in those pairs in which it terminated prematurely; this effect was especially strong when raters were using their own constructs but was also significant when they were using the other's constructs. Thus both hypotheses were supported (though the ways in which they were tested were not independent) thus suggesting that communication between two individuals will be more successful when they each find the other person to be meaningful, and also when they find the other's ways of viewing the world more meaningful. In fact it is likely that these two perceptions are highly related.

Individual differences which may affect these initial perceptions and thus later interactions have been studied by Landfield and Barr (1976; Landfield 1977). Subjects in 'interpersonal transaction' (IT)

groups (Landfield and Rivers 1975) were assigned to one of four quadrants according to whether they were high or low in differentiation (FIC) and high or low in integration (ordination) of their construct systems. Subjects in those four quadrants were then compared in terms of ratings made by the members of each IT group of the other members. In terms of meaningfulness subjects who were low in both measures were found to rate both the other members of the group and themselves less extremely than other subjects; they were also rated less extremely by other members of the group. Subjects high in ordination were found to be more accurate in their predictions of others' ratings of themselves than subjects low in ordination, while subjects with lower FIC scores were more predictable than subjects with high FIC scores. Finally, subjects low in differentiation rated both themselves and others more favourably than those with high FIC scores; however subjects high in ordination were the most favourably rated subjects by the rest of the group.

These results indicate that successful communication between people can not solely be explained in terms of the similarity between the individuals involved; rather some people may be just easier to get on with than others. In particular, subjects with highly integrated construct systems, as assessed in terms of ordination, may be liked more because they are better able to understand (i.e. predict accurately) other people. It is certainly a common sense assumption that some kinds of people will tend to be more liked than others; however the characteristics which prove to be most popular may be different in different contexts. In an IT group, in which emphasis is placed on interpersonal communication, it seems likely that

those who display more of an understanding of an individual will be more liked by him, but in other situations such persons could be threatening, especially if the understanding other was not understood in return. Unfortunately no other research making use of the ordination measure has been reported, though a few studies have revealed some differences in the attraction responses of cognitively complex and simple subjects. (Johnston and Centers 1973; Leonard 1976; Craig and Duck 1977).

Interpersonal Attraction and the Relationship between Construct Systems

The studies reviewed in this chapter suggest that similarity of certain aspects of the construct systems of two individuals is related to increased interpersonal understanding and, hence, more effective communication. While such a state of effective role-playing between two individuals is not necessarily indicative of friendship or liking, and it may indeed be indicative of the opposite in some cases, it is a common observation that people do like others with whom they see 'eye to eye'. Indeed this observation has been the basis for very many studies of interpersonal attraction; these will be reviewed in later chapters but for now the focus is on those few studies, apart from those of Duck (e.g. 1973b), which have related similarity of personal constructs to attraction.

Similarity of personal construct content was found to be a good predictor of communication effectiveness by Triandis (1959; 1960a) and by Landfield (1971). In the latter study such similarity was found to play a part in avoiding total breakdown of communication, and given that this is a fairly basic requirement for the establishment of freindship, Triandis' (1959) finding of a significant relationship

between similarity and likely is perhaps not surprising. Weigl et al (1973) investigated the similarity of marriage partners and found no difference between them and randomly formed pairs; nor was similarity related to 'marital success'. Their methodology is suspect, however, for similarity was assessed in terms of agreement about the relative meaningfulness of a list of provided constructs; it is unlikely that such a measure would be as sensitive as one based on elicited constructs (Adams-Webber 1970a).

Structural similarity of the sort investigated by Runkel (1956), Menges (1969), and Triandis (1959; 1960a,b), in which the relationships between the same elements, constructs or both is assessed, has not been related to interpersonal attraction, other than in the secondary findings of Triandis (1959) and Menges (1969). Two studies (Bender 1968; Johnston and Centers 1973) have, however, related interpersonal attraction to similarity of more abstract measures of construct system organization i.e. to similarity of degree of cognitive complexity. They can thus be compared with Landfield's (1971) study of the effects of FIC score similarity between therapist and client.

Johnston and Centers (1973) used Bieri et al's (1966) measure of cognitive complexity. Subjects completed the grid themselves and were then presented with one of two completed grids. Both grids had been completed by the experimenter, one in a cognitively simple way and the other in a more complex way, but subjects were told that they had been given the grid of another subject. Their task was to form an impression of this other person, on the basis of the information given, and rate him on the scales of the Interpersonal Judgement Scale (IJS), a measure of the attraction. Since subjects had previously been divided into cognitively simple and cognitively complex it was possible

to assess the effects of similarity on attraction. Overall, a similar stranger was liked more; this effect was especially powerful in the case of cognitively simple subjects.

Bender (1968) looked at similarity of complexity within the context of established relationships. He argued that people will tend to choose as friends others who are similar to them in this respect and also that friends will tend to converge in terms of their degree of cognitive complexity. The measure of complexity in this study was the percentage of variance accounted for by the first principal component. Elicited rather than supplied constructs were used. Each of 32 subjects were compared with their girl or boy friend, their best friend and an acquaintance whom they did 'not want to get to know better as [they did] not like their attitudes or values'. Similarity was assessed by simply subtracting the subjects score from those of his three named people and ignoring sign. The 32 subjects could be split into three groups according to the fate of their relationship with their girl or boy friend over the period of the study. Eight were engaged, eight were 'stable' i.e. had no verbalised intention of marrying and sixteen had split with their partner during the period of research (an academic year) despite not thinking that a split was imminent at the time of testing.

Table 6.1. Mean difference in complexity scores, for the three different groups, between subjects and their girl or boy friends, their best friend, and an acquaintance. (From Bender 1968, p.78).

	<u>Girl/Boy Friend</u>		<u>Best Friend</u>		<u>Acquaintance</u>	
	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>
Engaged (N=8)	2.965	2.73	5.050	4.85	7.130	7.09
Stable (N=8)	5.125	2.63	5.785	2.99	10.710	7.44
Split (N=16)	11.750	4.15	5.890	4.74	6.380	5.57
All SS. (N=32)	7.900	5.26	5.660	4.41	7.650	6.714

The results of this study, displayed in Table 1, show that for all three groups of subjects the subject and his best friend were significantly ($p < .05$) less different in degree of complexity than the subject and disliked acquaintance. The subjects are closer in complexity to their girl or boy friend than to the acquaintance in both the engaged ($p < .001$) and the stable ($p < .05$) groups. However this difference is reversed in the split group ($p < .01$). A comparison of the girl/boy friend differences with the best friend differences shows that fiance's are more similar to the subjects in the engaged group ($p < .10$), but that best friends are more similar to the subject than are ex-girl or boy friends ($p < .005$).

Between group comparisons show that engaged couples are more similar than either stable couples ($p < .075$) or split couples ($p < .001$), and that the difference between the latter two was also significant ($p < .01$). Other findings were that there was a greater difference in degree of complexity between non-reciprocating pairs than between reciprocating pairs of best friends, and that males tended to be more cognitively complex than females.

Before going on to discuss theoretical issues and to compare these findings with those of Landfield a further section of Bender's data will be described. Bender argues that similarity in construing forms a good basis for friendship in so far as it enables two people to accurately construe each other's constructs; in areas of construing in which two people are less similar then they must develop superordinate constructs which can adequately construe the different constructs of the other. In established relationships, therefore, whether through similarity or through the ability to construe the other's constructs, the constructs of the other person should be meaningful to each of the participants. The hypothesis to be tested is similar to one of

Landfield's but differs most sharply in that while Landfield is concerned with the meaningfulness of the other's constructs at the time of initial acquaintance, Bender is stressing the growth in such meaningfulness which must occur if the relationship is to develop.

The data required to test the hypothesis was collected after that reported above. Since each subject and their girl or boy friend, best friend and disliked acquaintance had completed repertory grids it was a fairly straightforward matter to produce a set of rating scales for each subject which consisted of constructs extracted from his own and the three other grids. A careful procedure was adopted to ensure that the subject's own constructs which were used in the scales had not been elicited using a triad containing any of the eleven people to be rated. Using rating extremity as the measure of meaningfulness the results parallel those reported for differences in cognitive complexity. Ratings on the subjects own constructs were significantly more extreme than ratings on constructs from any other source. Best friend's constructs produced more extreme ratings than either boy/girl friend's ($p < .10$) or disliked acquaintance's constructs. ($p < .025$). The finding that there was no significant difference between extremity ratings on constructs from the last two sources was due mainly to the split group. Moreover in the engaged group ratings were (non-significantly) more extreme on the girl or boy friend's constructs than the best friend's.

Both major hypotheses were thus supported in Bender's study and the measures used were extremely sensitive to differences between relationships. A comparison of this and Landfield's study reveals that while the latter stresses the meaningfulness of the other person and his constructs as setting up lines of communication on initial

acquaintance, and differences in degree of construct organisation as providing more scope for eventual improvement, Bender's stress is on the gradual convergence of construct systems as a successful relationship develops, such that the other person's constructs become more meaningful and differences in degree of construct organization become less. Both agree that construct content is more important at the earliest stages of acquaintance, for without the initial ability to communicate provided by similarity of construing and the ability to meaningfully construe the other's constructs, more abstract features of construct system organization are irrelevant. Landfield's finding that similarity between therapist and client in FIC scores was related to non premature termination of therapy suggests, however, that level of construct organization is important at this stage of initial communication.

Two main issues arise from a comparison of these two studies: firstly, the role of construct content similarity and whether this is a lasting role throughout a relationship or whether its efforts are temporary. Since discussion of this question involves consideration of the important place of validation in interpersonal relationships it will be discussed separately below. The second issue of interest is concerned with whether high or intermediate levels of similarity of level of construct organization is most characteristic of successful established relationships, and this question will now be considered.

Construct System Organization and Interpersonal Relations

Landfield found that while similarity in FIC scores between therapist and client seemed to play a part in avoiding premature termination of the therapeutic relationship, improvement in the client was facilitated by differences in the two construct systems. Thus it

follows that an intermediate level of similarity at initial acquaintance, was related to a more effective therapy. Bender, on the other hand, found that the more established and successful the relationship then the more similar were the two participants in terms of their degree of cognitive complexity. These seemingly divergent findings can be explained in a number of ways. Firstly, the different measures of construct organization employed in the two studies may be unrelated implying therefore that the results of the studies are also unrelated. Given the findings of the studies reviewed in Chapter 4 this seems a reasonable proposal; however there is no published evidence, as far as the present writer knows, which suggests that this is the case and, further, other explanations are readily available.

An obvious methodological difference between the two studies lies in the time at which the data were collected; whereas Landfield was attempting to predict later outcome on the basis of earlier similarity, Bender collected his data once relationships were established. Since both authors assume that successful relationships are characterised by a convergence in degree of construct organization it may be that on initial acquaintance, the best friends in Bender's study, were less similar than disliked acquaintances but that, over time and as they got to know one another better and were influenced by each other, they became more similar. There is no evidence for or against this explanation though Bender's finding that the fate of the heterosexual relationships in his sample was related to earlier similarity is at least suggestive of the generally important role of similarity.

A stronger argument though is based on the differing natures of psychotherapy and of friendship. One aspect of this is the inequality in the therapy situation whereby one of the participants is expected to change in some way while the other remains relatively stable. This

inequality is basic to psychotherapy but is not expected to be part of friendship which is normally based on mutual rather than one-way influence. In other words, and in theory if not always in practice, whereas change in one of the participants is the goal towards which the relationship is directed in psychotherapy, change is not fundamental to the concept of friendship and when it does occur is expected to be possible in both people involved. In such a situation as the latter the need for 'methodological stimulation' towards change, which, Landfield argued, is provided by divergence in degree of construct organization, is less and therefore higher levels of similarity may be more attractive than they are therapeutically effective.

The Place of Validation in Interpersonal Relations

As a scientist Kellian man needs to test his predictions, keeping those constructs which enable him to anticipate events and discarding those which lead to invalidated predictions. Many of our constructs can only be tested against our constructions of other peoples constructs i.e. in the light of the success or otherwise of our role-playing. Our friends can thus play a vital part in the validation or invalidation of our construct system and Bender (1968; 1969) suggests that we tend to choose friends who will, in fact, provide us with validation rather than invalidation of, in particular, our core (identity-governing) constructs. He argues that a disconfirmation of our core self-constructs can lead to psychological 'ill-health' due to loss of identity and that since 'self-constructs can be tested only by noting the feedback from other people' (Bender 1969, p.34) it is 'therefore essential that we choose as friends those who will construe us on our core self-constructs as we construe ourselves' (p.35).

It is overstating the case to argue that self-constructs can only be tested using feedback from others e.g. if my construction of myself as intellectual has the implication owns a lot of 'difficult' books then I may validate this construction by simply going into a bookshop and buying a few volumes of Kant or Wittgenstein, for example. However, there can be few, if any, human activities which do not involve elements of role-playing, in the Kellian sense; in the example above the construction of certain books as 'difficult' may be based on what other people have said about them and on the anticipation of what others will think of me when they visit my house and find such books lying about. Bender's hypothesis suggests that visitors who construe me as intellectual will be liked, while those who draw no such conclusion (perhaps because, in their eyes, intellectuals are those who read a lot of 'difficult' books!) but who threaten my self-construction in this respect, will be disliked.

Bender (1969) tested out this hypothesis in a study in which subjects rated themselves as they thought certain other people saw them. Overall it was found that the more liked a person was then the greater similarity between his attributed ratings of the subject and the subjects own ratings of himself. More importantly the more liked a person was then the more likely it was that any differences between the subject's self-ratings and those attributed to the other person would be on the subjects least important constructs, as measured by resistance to change techniques, than on his most important constructs. Conversely the more disliked was the other person the more likely that any such differences would be an important as opposed to unimportant constructs. Bender views this as good evidence for his argument that friends are those people who validate each other's core constructs.

In his earlier work Bender (1968) argued that the similarity of another's constructs did not just serve to aid communication at initial acquaintance, as Landfield (1971) hypothesised, but also indicates to an individual the extent to which another is likely to validate his core constructs. While Bender's (1968) data is only weakly related to this argument it is important in that it assigns to construct similarity a more central role in the development of friendship than as an aid to communication. It is in fact a similar argument to that propounded by Duck (e.g. 1977a) which is discussed in Chapter 11.

Conclusion

Although not necessary for the development of effective role relationships there are good theoretical grounds for believing that some similarity of construing is an aid to effective communication. The studies reviewed at the beginning of this chapter provide good evidence that this is the case for similarity of both construct content and of construct structure. Since one aspect of friendship, normally construed, is that friends can communicate with each other to a greater extent than they can with others, it follows that similarity of construing might therefore be related to friendship formation, and some of the studies reported in this chapter support this proposal.

The accurate construing of another has more important implications than the establishment of role relationships; constructs which govern an individual's role relationships may become part of his core structures. Kelly points out that 'if one suddenly finds that his interpretation of many other persons' construing has been totally wrong, his own life falls apart' (1955, p.513). To avoid

the possibility of such threat the individual, Bender suggests, chooses as his friends those whom he considers will validate his core constructs by construing him in the same way as he does himself; such friends need to be understood well also in order to avoid anxiety and threat. Similar others, Bender argues, are more likely to support our self-construction, as well as being more readily understood. Similar others are liked therefore because they are more likely to validate our core constructs.

The importance of validation in friendships has been more fully explored by Duck (e.g. 1973b; 1977a), as has the role that construct similarity plays. Before going on to discuss his work, however, research into interpersonal ^{attraction} ~~attention~~ which deals with similar issues X from other theoretical perspectives will be considered. Duck's work can be viewed as an attempt to integrate Personal Construct Theory and the more traditional social psychological approach to the study of interpersonal attraction.

CHAPTER SEVEN

THE STUDY OF INTERPERSONAL ATTRACTION

Such problems as why certain people become friendly while others do not, or why some marriages are happy and stable, while others seem to be self-destructing, collapsing in emotional ruins despite the partners' best intentions, are obviously important objects of psychological inquiry, having enormous theoretical and practical relevance. The area of 'interpersonal attraction' may be viewed as a central pivot of social psychology, relating to all other areas (c.f. Rubin 1973).

The vast number of papers published in the area within the last 25 years (Byrne and Griffit 1973; Huston and Levinger 1978) reflect this importance, as well as being partly due to the development, since 1961, of the 'attraction paradigm' (Byrne 1971), a laboratory based paradigm around which much of the contents of later chapters in this review will be centred. The aim of the present chapter, however, will be to give a selective overview of the whole area through a discussion of different conceptualisations of attraction, its measurement and the theoretical frameworks which have been applied in the area.

Conceptualisations of Interpersonal Attraction

Newcomb (1961) defines attraction as 'any direct orientation (on the part of one person toward another) which may be described in terms of sign (+ or -) and intensity' (p.6). Marlowe and Gergen

(1969) present a similar definition; for them 'interpersonal attraction' generally 'refers to those instances in which a person responds in an emotionally positive way to another' (p.622). As these authors are aware these representative definitions are 'catch-alls' i.e. they distinguish neither between different types of non-neutral sentiment, nor between kinds of relationship. Interpersonal attraction has generally been considered as unidimensional (Berscheid and Walster 1969) and the fact that

'the differences among such phenomena as the comradeship felt by members of a team, the respect held for a powerful leader, sexual attraction for a person of the opposite sex, a mother's devotion to a child ... far outweighs the similarities'

(Marlowe and Gergen 1969, p.622)

has been generally recognised but almost as generally ignored.

Some attempts at multidimensional conceptualisations have been made however. Bales (1958) has distinguished liking from respect, and gone on to show that the most respected members of discussion groups are rarely the most liked; Kiesler and Goldberg (1968) provide further evidence for the usefulness of this distinction. In a factor analytic study Triandis (1964) found five independent components of attraction which he labelled Formal Social Acceptance with Subordination; Marital Acceptance; Friendship Acceptance; Social Distance; and Subordination-Superordination. Rubin (1970; 1974) has developed independent scales of love and of liking while McCroskey and McCain (1974) have produced scales which measure physical, social and task attraction. Other distinctions have been drawn between liking and passionate love (Walster 1971; Berscheid and Walster 1974a) and conjugal and romantic love (Driscoll et al 1972).

Little research has been done which has made use of such distinctions and the measures of liking and attraction, to be discussed below, are largely global indices of affect.

The Measurement of Interpersonal Attraction

The development of sociometric techniques by Moreno (1934; Lindzey and Byrne 1969) provided the first major impetus for the study of interpersonal attraction. The basis of these techniques is the designation by members of a group of the other members with whom they prefer to associate, either in general or in a specific activity. From these choices the sociometric structure of the group can be determined and the popularity of each member ascertained.

More recently a plethora of measures has emerged (Byrne and Griffit 1973). These are mostly, but not exclusively, verbal measures and mostly, but not exclusively, concerned with the evaluative rather than the cognitive or behavioural components of attraction. The most widely used measure has been the Interpersonal Judgement Scale (IJS) introduced by Byrne (e.g. 1971). This consists of six Likert-type rating scales on which subjects rate another's intelligence, knowledge of current events, morality, adjustment, likability, and desirability as a work partner. The scores on the last two scales are summed to give the measure of attraction; a split-half reliability of .85 has been reported for this index (Byrne and Nelson 1965a).¹

¹ Given the findings of Bales (1958), Triandis (1964) etc, reported above, that task-orientated attraction can be differentiated from social attraction this may seem a rather high figure. However the IJS has generally been used in limited laboratory situations in which the implications for the subjects of their responses have been correspondingly limited. Even when task relevance has been included as an aspect of the experimental design, the social context has been minimal (e.g. Senn 1971; Schettino and Baldwin 1974). In more realistic situations the distinction may be more relevant and, given this, it is unfortunate that most studies do not report a split-half reliability coefficient since, in some cases, merely summing the two scales could be misleading (c.f. Stroebe et al 1971).

Semantic differentials containing only evaluative scales have been used as attraction measures (e.g. Novak and Lerner 1968; Regan 1976) and Anderson (1968) has provided 'likeableness' ratings for 555 personality trait words which may be used to describe others (Lott et al 1970). More elaborate questionnaires have been developed by Rubin (1970; 1974), Wright (1969), La Gaipa (1977b) and McCroskey and McCain (1974) but have been relatively little used. These scales differ from the IJS, not only in terms of complexity and length, but also in terms of the assumptions underlying their use. While Rubin, for example, is attempting to 'measure' love and liking as conceptually separable components of interpersonal attraction, Byrne defines attraction as the response to the IJS. For Byrne (1971)

'any relationship or lack of relationship between the attraction response and other responses elicited concurrently by the same stimulus variables may be an interesting research question. The concern is not with the psychometric evaluation of a measuring device but with establishing the generality of a construct' (p.231).

Huston (1974) has argued against this approach, proposing that the need is for measures which are grounded in a conceptual context in which different sentiments are distinguished.

Rather different from either of the above approaches is that of Altman and Taylor (1973) who stress the similarity of the development of social relationships and provide an abstract theoretical framework within which the common 'social penetration' processes can be conceptualised. Arguing that individuals' responses and behaviours occur in interrelated patterns they emphasise the need for different types of measures to be used simultaneously. However in their own research they have tended to concentrate on measures of self-disclosure. Such an

integrating framework as that provided by Altman and Taylor may be required in order to make sense out of the great number of measures reported in the literature.

Problems of social desirability and demand characteristics have led to the development of 'indirect' measures of attraction. For example, Aronson and Cope (1968) used the number of phone calls subjects volunteered to make on behalf of a confederate as an index of their attraction towards that confederate. A more elaborate procedure is involved in the 'bogus pipeline' technique which requires that subjects be convinced that a polygraph machine can accurately assess their feelings for another person; subjects are then asked to estimate the meter readings (Jones et al 1972). Jones et al obtained slightly different results using this technique and rating scales, but the technique may be susceptible to social desirability effects (Cherry et al 1976), and the practical and ethical problems involved would seem to outweigh any advantages the technique may have.

Other measures have been derived from studies of non-verbal communication e.g. amount of visual contact (Exline and Winters 1965), physical proximity (Byrne et al 1970; Allgeier and Byrne 1973), bodily posture (Mehrabian 1968), seating position (Byrne, Baskett and Hodges 1971; Latta 1976), head and shoulder orientation (Mehrabian 1968; Latta 1976) and pupil dilation (Hess 1965). Altman and Taylor (1973) assume that such measures can only be understood within the context of the others; an assumption also held by Argyle and Dean (1965) who postulate that while both physical proximity and amount of eye contact are indicators of intimacy, they may not be viewed in isolation for intimacy 'equilibrium' processes will ensure that if eye contact is increased then physical distance will also increase in order to maintain the established level of intimacy.

Of studies comparing self-report and behavioural measures Byrne et al (1970) found that IJS assessed attraction correlated -0.36 (females) and -0.48 (males) with a physical distance measure. Byrne et al (1971) found that while similar others were more attractive than dissimilar others only females showed a preference for sitting beside them rather than a dissimilar other; males preferred to sit opposite a similar other. Rubin (1970) found that couples who were strongly in love, as assessed by questionnaire, exhibited more mutual gazing than did those couples who were less strongly in love. Others, however, have obtained inconsistent results (e.g. Mehrabian 1968; Efran 1969, reported in Byrne 1971). Finally Latta (1976) compared six measures; he found high intercorrelations between three verbal report measures and between three behavioural measures, but the two types of response were unrelated.

In experimental studies of attraction it is more important that measures should be contrasted and compared than in real-life studies for which the original techniques of Moreno seem more suitable. Therefore, and in accordance with Kelly's concentration on an individual's own view of a situation, sociometric techniques are employed in all of the studies reported in this thesis.

Theoretical Perspectives

As Huston (1974) has remarked the basic feature of most approaches to interpersonal attraction is that the hedonistic nature of man is assumed; it therefore follows that people will be attracted to those others who provide the most 'rewards' (c.f. Berscheid and Walster 1969). The three major perspectives provided by balance theory, exchange theory and reinforcement theory all rest upon this assumption.

Although other theoretical approaches such as symbolic interactionism (McCall 1974), cognitive-developmental (Lickona 1974) and the ethogenic (Harre 1977) have been brought to bear upon the issue of interpersonal attraction, this review will focus on the three major perspectives mentioned above as these have traditionally provided the frameworks within which theories of interpersonal attraction have developed (Murstein 1971a). Each theory will be briefly summarised and selected areas of research interest discussed.

Balance Theory

First formulated by Heider (1958), balance theory has been applied and developed in the area of interpersonal attraction by Newcomb (1961; 1963; 1968; 1971); Heider having shown little inclination to test his conceptions (Murstein 1971a). Newcomb's analysis takes as basic a system involving three elements. In this context, there would be a person's (P) attraction, positive or negative, towards another individual (O); P's attitude toward an object, X, where X can be any object of human awareness which is relevant to the P-O relationship; and P's perception of O's attitude towards X. There is a corresponding system with O as ego.

Within such a system there is a 'strain toward symmetry' or toward 'balance'. In the case, for example, where P is attracted to O (+PO) the system will be balanced if either P has a positive attitude towards X (+PX) and perceives that O also has a positive attitude toward X (+OX) or if both of these components are negative (i.e. -PX and -OX); the system would be unbalanced if either -PX and +OX, or +PX and -OX was the case.¹ In the unbalanced system P experiences tension which

¹ The case of negative attraction between P and O may not be quite so straightforward (Newcomb 1971).

can be resolved in a number of ways i.e. P can change his attitude toward X or his feelings for O; P can decide his attribution of O's attitude towards X was mistaken; P can attempt to change O's attitude to X; P can decide X is unimportant or irrelevant to his relationship with O. Heider assumed that all balanced states were in some way equivalent and thus predictions about the course of action P is likely to adopt to achieve balance are impossible in his model (Newcomb 1971).

Two predictions from balance theory have stimulated much research. The first is that the perception of attitude similarity in another will lead to liking and the second that, in general, we will like those who seem to like us. Both of these follow directly from the model described above. Newcomb (1961) obtained strong evidence for the first of these predictions and also showed that there was a relationship between actual, as opposed to perceived, attitude similarity and liking. Byrne (1971) reports a large number of studies which show that attitude similarity leads to initial attraction. As would be expected from balance theory a number of studies (e.g. Newcomb 1961; Byrne and Blaylock 1963) have shown that there is a tendency to overestimate the similarity of liked others to oneself.

The second, 'reciprocity-of-liking' prediction is well supported (e.g. Dittes 1959; Aronson and Worchel 1966), but a controversy has arisen over the reaction of low self-esteem individuals to praise or expressed liking from another. Balance theory predicts that such people should like positive evaluators less than negative evaluators while self-esteem theory (Dittes 1959) predicts that low self-esteem individuals will be more rewarded by positive evaluations than will those of high self-esteem. Most empirical work has supported the latter position (Jones 1973 ; Mettee and Aronson 1974; Krauss and Critchfield 1975) but a suggestion made by Berscheid and Walster (1969)

that in cases in which the other's evaluations are based on specific traits or abilities consistency principles will hold, but that in cases in which the evaluation is global, self-esteem principles will hold, has been partially successful in resolving the controversy (Regan 1976; Stroebe 1977) and Aitkenhead (1980) has provided evidence for the view that both needs, for self-esteem and for consistency, may be operative.

Balance theory provided a solid theoretical backing for the hypothesis that attitude similarity leads to liking and for Newcomb's (1961) important study, but has since declined in importance relative to more overtly reward based theories.

Exchange Theory

Under this heading can be represented various specific theories, all of which have certain basic principles in common. These are clearly expressed in the theory of Homans (1961). Combining economic principles with learning theory, Homans views human interaction as a matter of investment and return on investments. The concepts of reward, cost and outcome are basic to the theory. Any behaviour on the part of one person which contributes to the gratification of another person's needs is said to be rewarding for the latter. Costs can also be incurred in any relationship: these include not only the unpleasant consequences (or punishment) which another's behaviour may produce, but also the value of the rewards foregone by engaging in one particular behaviour rather than another. Outcome is defined as reward minus cost; if it is positive then the person is said to have made a profit, if negative, then a loss. In interaction individuals seek to maximise their own profit, although the need to maintain the relationship will

mean that this is not totally at the expense of the other who will withdraw if his costs are too high.

Thibaut and Kelley (1959) introduce two concepts which take into account 'reality principles'. The individual's comparison level (CL) is the minimum amount of profit from an interaction which the individual will accept as satisfactory. Modifying the effects of his comparison level is the person's comparison level of alternatives which is his evaluation of outcomes available in the present situation compared to those available in possible alternatives. Outcomes relative to an individual's comparison level is said to determine his attraction to the relationship, while outcomes relative to his comparison level of alternatives determine his dependence on the relationship.

Homans' theory has come under attack from Abrahamsson (1970) who points out the tautology involved in the definitions of the basic concepts of the theory which are all defined in terms of each other. A major problem is involved in the measurement of concepts like rewards and costs for while 'goods' in economics are readily quantifiable this is not true of, for example, social approval viewed as a commodity. Precise predictions cannot be made from the theory since the rewards and costs operating in a particular situation cannot be compared: this is especially the case when different classes of rewards are involved e.g. love and money. Abrahamsson also criticises Homans for ignoring the subjective meanings which individuals place on situations.

The problem of defining and measuring rewards and costs is one common to all theories based on social exchange principles (La Gaipa 1977a) and means that almost any behaviour can be explained in exchange terms by post hoc identification of the rewards and costs which 'caused' the behaviour. Foa and Foa (1971) have gone some way towards

identifying different types of reward and the relationships between them, while Lerner (1974) has identified occasions when different principles of exchange are applicable e.g. when 'Marxist' principles of justice are appropriate rather than the 'capitalist' principles outlined by Homans.

An example of a research proposal derived from exchange formulations is the idea that propinquity leads to friendship, since, other things being equal, greater costs would be expected in situations which involved the expenditure of more time and effort to interact with others. There is a lot of support for this proposition; for example, Festinger et al (1950) studied the social relationships among the residents of a student housing project and found that architectural features had a great effect on the formation of friendships such that, among other findings, people were much more likely to be friendly with their next-door neighbours than with others and people who lived near stairways or mailboxes tended to be more popular. Warr (1965), however, showed that proximity was related to disliking as well as to liking while Sykes et al (1976) showed the importance of subjective factors. These latter authors found that propinquity could not be equated with physical distance: naval recruits in adjacent bunks were physically closer than they were to their fellows in the upper or lower bunk but this had less effect on amount of interaction which, the authors suggest, was affected more by feelings of 'interaction obligation'.

On the whole classic exchange formulations have been influential in providing the basis for a number of theoretical approaches to interpersonal attraction and personal relationships (e.g. Levinger and Snoek 1972; Altman and Taylor 1973) than in leading directly to

hypotheses to be tested. The most valuable characteristic of such exchange-based theories is their emphasis on the maintenance and development of relationships over time (Burgess and Huston 1979), along with which has gone a greater stress laid on internal subjective processes (e.g. Altman and Taylor 1973; Kelley 1979). The central concepts of the approach remain vague however while being capable of a wide range of application.

Reinforcement Theory

Although Lott and Lott (e.g. 1974) have produced an influential reinforcement-based theory the related classical-conditioning model of Byrne and Clore (1970; Clore and Byrne 1974) has pervaded the literature to a greater extent and will be the approach described here. According to Clore and Byrne (1974) their model makes four basic assertions:

- '(a) a variety of social communications and other interpersonal events can be classed as either reinforcing or punishing;
 - (b) reinforcing events elicit positive affect; (c) stimuli associated with positive or negative affect develop the capacity to evoke that affect; (d) stimuli that evoke positive affect are liked, while stimuli that evoke negative affect are disliked.
- Thus, one likes others who reward him because they are associated with one's own good feelings.' (p.145)

Experimental work which has tested this model has been less forthcoming than has research concerned with identifying stimuli, such as attitude similarity, which affect attraction responses to 'bogus strangers'. Briefly, research of this latter sort involves presenting subjects with information about another (fictitious) person and having

the subject rate this other person on the IJS scales described earlier in the chapter. Usually the stimulus presented is attitudinal and attraction has been found to be a positive linear function of similarity. This research will be discussed more fully in the next two chapters: here the concern is with some of the research which has tested the classical-conditioning model described above.

According to the model we should like those who are associated with reinforcement. In support of this are such studies as those of Lott and Lott (1960) who showed that children preferred members of their own play groups over other peers after they had successfully achieved the goals of a game within their own group, but not when they had been unsuccessful. Other findings in support of this proposal include those of Griffit (1968) who found that subjects liked their experimental partners more when they received extra credit for their research participation in their partner's presence than when they did not.

In the Byrne-Clore model affect plays a key part in mediating between stimulus and response and two predictions derived from the model are concerned with affect. The first, that stimuli associated with positive affect are liked and that stimuli associated with negative affect are disliked, has received support from Griffit and Veitch (1971) who showed that negative affect, caused by excessively hot and humid or crowded conditions, led to lower attraction ratings of strangers. Gouax (1971) used films to produce elation and depression and obtained significant effects on attraction toward a stranger. Kendrick and Johnson (1979), however, have argued that the use of a fictitious stranger is responsible for the results obtained in these studies and that when another subject is also exposed to the aversive conditions attraction towards this fellow sufferer is greater than when the situation is less aversive. Although

questioning the use of the bogus stranger paradigm, Kenrick and Johnson suggest that their results can be reconciled with the conditioning model by assuming that the presence of another lowers arousal in an aversive situation and this is negatively reinforcing.

The second prediction concerning affect is that stimuli that influence attraction elicit affective responses. The use of self-report measures of affect lends support to this prediction (Byrne and Clore 1970) but suffers from the similarity between the scales used to measure attraction and the semantic differential scales used to measure affect. Stronger evidence is provided by Clore and Gormly (1974) who used a physiological measure of arousal which seems more closely related to what is meant by arousal in this model. Skin conductance levels were monitored during face to face interactions with an agreeing or disagreeing confederate. Arousal was found to be positively correlated with attraction towards an agreeing confederate, and negatively with attraction towards a disagreeing confederate. Further, for the least aroused subjects there was no difference between attraction for agreeing and disagreeing confederates while for moderately and highly aroused subjects this difference was present and was greater for the latter group. It remains to be seen whether these results are applicable to experiments in which the fictitious stranger technique has been used.

The emphasis on affect in the Byrne-Clore model has been seriously questioned by cognitive theorists (e.g. Kaplan and Anderson 1973 ; Ajzen 1977) while Byrne and his colleagues have argued that affective and cognitive approaches are complementary. Kaplan and Anderson (1973) favour a model in which 'stimuli' are viewed as informative, rather than related to reinforcement; in making an evaluative judgement an individual integrates the various pieces of information which he

possesses about the other, on the basis of their value and relevance to the particular judgement being made, to produce an average overall judgement. The experimental paradigm involved is very similar to that of Byrne; derived from Asch (1946) it involves presenting subjects with a list of personality traits which supposedly describe another person whom the subject is to form an impression of.

Ajzen (1977) has expressed a similar view that 'stimulus' information about another, rather than being reinforcing or not, leads us to expect that the other has positive or negative aspects to his personality. However while Anderson emphasises the 'mechanical' integration of information, Ajzen argues for a 'constructive' approach in which it is the beliefs which the judge forms on the basis of the presented information which are important rather than the information itself. Ajzen does not argue that emotion plays no part in liking and disliking but rather rejects the distinction between emotion and cognition. He cites Averill's (1976) definition of emotions as 'cognitive (information processing) systems or rules of behaviour' and, goes on, 'he [Averill] views physiological factors as contributing to, and setting limits for, the social construction of emotional behaviour' (Ajzen 1977, p.52).

Clore and Byrne (1974), on the other hand, wish to retain the distinction and to reassert the centrality of affect in their model. However they also recognise the importance of cognition for 'it is clear that one must frequently engage in all kinds of cognitive processing in order to glean every last reinforcement from what people say and do' p.146). Stimuli can differ not only in terms of the affect they produce but also in terms of whether they provide positive or negative information. Thus, for example, eating cake when dieting produces,

according to Clore and Byrne, positive affect but is valued negatively. Similar attitude statements and positive evaluations of oneself are positive in both respects but while the former is slightly more informatively positive, the latter produces more positive affect.

Experiments performed in an attempt to decide between the two positions have not been particularly successful. As Byrne et al (1973) point out, cognitive theorists have tended to overlook the research which has tested hypotheses relating affect and reinforcement, while criticising 'lower-level' experiments on the effects of attitude similarity (c.f. Clore and Byrne 1974, pp.153-163). It has proved very difficult to isolate affect from cognition. For example, it has been suggested (Clore and Byrne 1974) that the slope of the line in the reinforcement-attraction relationship indicates the strength of the affective component. In support of this, Clore and Gormly (1974) found that subjects who showed little arousal did not differentiate between similar and dissimilar others in terms of attraction. However, as the authors point out, attraction could not be predicted from level of arousal alone since high arousal was associated with both attraction towards a similar other and with dislike of a dissimilar stranger i.e. information must also be considered here (c.f. Schachter and Singer 1962).

The conflict may perhaps best be viewed as one between different conceptions of the nature of people's processes which requires for its resolution, not the solution of low-level empirical quibbles, but some broader over-arching principles. Personal Construct Theory could provide such a resolution for rather than viewing emotion as a type of cognition, as Ajzen does, or as something intrinsically different from cognition, as Clore and Byrne do, Kelly sees them both

as facets of the same process, construing. Both 'thought' and 'feeling' are ways in which the individual makes sense of, and explores, his world and, as such, they are not the separate components of Clore and Byrne's conceptualisation. However, neither are they both, as Ajzen suggests, examples of cognition since, firstly, construing is not mere cognition and, secondly, 'cognition' and 'emotion', though both activities within an overall construct system, may, nevertheless, be convenient labels for different, though overlapping, construct sub-systems. The integrating possibilities of construct theory in this respect remain largely unexplored (Bannister 1977) but the usefulness of the approach for research into interpersonal attraction is clearly suggested (Duck 1977a).

CHAPTER EIGHT

ATTITUDE SIMILARITY AND INTERPERSONAL

ATTRACTION

That friends must have 'something in common' is a popularly held notion which has also been studied extensively by psychologists. Clearly 'something in common' is not 'everything in common' and one of the emphases in the literature has been to identify the attributes which friends and lovers do share. A convenient distinction to make here is that between similarity of attitudes and similarity of personality for while the former has consistently been found to be related to liking the latter has not (Duck 1973b). In this chapter research into the place of attitude similarity will be discussed with similarity of personality being considered in Chapter 10. Another useful distinction can be made between correlational and experimental studies. Byrne (1971) and his associates have been the main protagonists of the experimental approach which, for a time, dominated the literature despite being largely restricted in use to the study of first impressions. Studies of real-life relationships have, in the main, employed correlational methods. Reflecting the dominance of the experimental approach in the literature much of the following discussion will be concerned with Byrne's 'attraction paradigm'.

Early Studies

Richardson (1939) reviewed a number of studies of the similarity of friends and marriage partners and concluded that 'throughout all the traits and the range of ages the correlations between the paired scores of friends or marriage partners have been positive with very few exceptions' (pp.116-117). Further, and foreshadowing the results of later studies, she suggested that while similarity of attitudes and interests was important, especially between husbands and wives, the role of similarity of temperament was less clear. Interestingly, but on the basis of very little evidence, she also suggests that there may be age differences in the importance of attitude similarity, citing, in support of this argument, the essentially zero correlations found among elementary school friends by Pintner et al (1937), the high correlations found in married couples (e.g. Schiller 1932; Hunt 1935; Schooley 1936), and the intermediate correlations between college friends (e.g. Winslow 1937). An alternative explanation would be in terms of the depth of the relationships.

Studies of married couples include that of Schiller (1932) who studied a fairly homogenous set of 46 couples and found them to be more similar than randomly paired couples in terms of their age, height, weight, arithmetic reasoning, vocabulary, word association and opinions. Hunt (1935) had her subjects rank order 17 ideals and obtained correlations of .475 for married couples and .255 for randomly paired couples; similarity was not related to length of marriage. Schooley (1936) found her 80 married couples to be similar in respect of physique, abilities, status, values (assessed using the Allport-Vernon Scale) and attitudes (towards birth control and communism). The couples were more similar in attitudes than in values. Couples who

had been married for 5-20 years were more similar than those married for 1-4 years in terms of their attitudes towards birth control and their Economic, Political and Religious values but were less similar in terms of Theoretical and Aesthetic values. Thus, as in the Hunt (1935) study, there is no clear evidence here for the view that attitudes and values converge as the length of a relationship increases. Newcomb and Svehla (1937) also found both older and younger married couples to be equally similar in their attitudes towards the church, war and communism.

Friendships within a college situation have been the most widely studied of non-marriage relationships. Vreeland and Corey (1935), in a study of 30 pairs of intimate same-sex friends, found no evidence that friends had similar attitudes and opinions but argued that this was due to the irrelevance of the issues concerned to the subjects. Winslow (1937) did find that friends were moderately similar (correlation = .24) in the conservatism-liberalism of their views, though there were fairly wide variations in this relationship when individual scores were considered e.g. whereas friends were similar in their attitudes towards Negroes (correlation of .44) they were less similar in their attitude towards current economic policies (.11). The friendship pairs were divided into three groups on the basis of the length of friendship and correlations of .24 (0-3 years), .40 (3-5 years) and .23 (6-20 years) obtained. Since the accuracy of subjects in predicting their friend's attitudes tended to drop along with similarity in the group of longest friendship this suggests that in these relationships similarity continued to be assumed when it no longer existed to such an extent. Finally, Winslow also obtained an interesting difference between the sexes with male friends being

similar (.35) while female friends were not (-.10).

Female friends were found to be similar in their values by Richardson (1940), who also obtained evidence for her earlier claim that the importance of similarity increased with age. She found that while both undergraduate female friends and 'adult' female friends (aged 28 to 50) were more similar than appropriate control pairs the effect was much stronger in the latter group, and adult friends were found to be more similar than undergraduate friends. As Richardson point out, these results may be due to either value similarity being more important for adult friends than for undergraduates, or to a generally higher level of friendship in the adult group, or to both. In contrast to the results of this study Reilly et al (1960) obtained only a very slight positive relationship between value similarity and female friendship despite using the same measure (Allport-Vernon Scale) as used by Richardson. Reilly et al suggest that their results were due to the homogeneity of the group studied.

Two important characteristics of these early studies are worth mentioning. Firstly, although a number of them had demonstrated a link between attitude or value similarity and friendship or marriage, the direction of the relationship was unknown although there were hints in that increasing acquaintance did not necessarily lead to increased similarity (Hunt 1935; Schooley 1936; Newcomb and Svehla 1937; Winslow 1937). Secondly, these studies all tended to be atheoretical, being concerned mainly with collecting evidence for or against the notion that 'birds of a feather flock together'.

Newcomb (1961) covered both these points. Not only did he show that pre-acquaintance attitude similarity could predict later liking, but

he also derived his hypothesis from Heider's balance theory¹.

This study is described in the next section.

The Acquaintance Process

Newcomb (1961; 1963) studied two groups of 17 male students in successive years. These subjects who were strangers initially were given free room and board in exchange for taking part in the research. Each year the group involved lived together in a house for the 16 weeks of the study, during which time they completed a variety of attitude scales and questionnaires as well as regularly making sociometric choices among the rest of the group.

On the basis of his modification of Heider's theory (described in the last chapter) Newcomb predicted a positive relationship between liking and perceived similarity. He further predicted that, as the subjects got to know one another better and hence could more accurately assess similarity between themselves and others, there should be an increasing relation between actual similarity and liking.

In both groups subjects not only provided sociometric rankings of the other group members but also estimated the sociometric rankings made by the other group members. In the year II group the subjects also periodically rank ordered 6 Spranger values and predicted others' rankings.

As expected it was found that the rate of change in sociometric rankings declined over time, as presumably, subjects discovered less 'new' information about each other. The relationship between liking

¹ Winch (1958) also produced an influential theory but his emphasis was on personality and his approach is therefore described in Chapter 10.

and perceived similarity was, despite these changes, predicted to remain strong at all stages of acquaintance. This was found to be the case for all three of the 'attitude objects' involved i.e. the self, the remaining subjects and Spranger values (year II only). Thus, for example, in both years, there was a very strong tendency for subjects to assume, throughout the period of the study, that the person whom they ranked highest 'returned the compliment'.

Thus as the friendship rankings changed so too did the perception of agreement with the other subjects in such a way that the system remained in 'balance'. Actual agreement was expected to be related to friendship only after sufficient time had elapsed for the subjects to get to know one another. With the self as object the results were equivocal in that subjects did not become more accurate over time in their predictions of others' liking for them but rather displayed a general tendency to assume reciprocity of liking. That this was found to be justified in the later stages of acquaintance seems anomalous. A clearer picture emerged, however, when attitudes, values and the rankings of other house members were considered; in all of these subjects' predictions became more accurate over time. Similarity of attitudes and values was significantly related to friendship by the end of the period of study but had not been so related in earlier weeks. Most importantly since attitudes and values remained stable while sociometric choices fluctuated it followed that pre-acquaintance similarity could predict mutual sociometric choices at later stages but not at earlier stages of acquaintance. Similar results were obtained when mutual liking was related to agreement about other house members; low correlations in the early stages rose gradually as the others became better known and, presumably, interpersonal influence increased.

A replication of Newcomb's study was performed by Curry and Emerson (1970) who obtained similar results though there were differences among the nine groups studied in the extent to which the predictions were supported.

Correlational studies have thus frequently found a relationship between friendship or marriage and attitude and value similarity. However the relationship is often weak due possibly to the many other variables, other than such similarity, which may be operating and which are impossible to control using correlational techniques (Byrne and Griffitt^t 1973). For example, proximity has been shown to be important in determining liking (e.g. Festinger et al 1950) and two studies (Nahemow and Lawton 1975; Sykes et al 1976) have shown, in two very different settings (a city housing project and a naval dormitory respectively) that, with liking held constant, proximity and similarity were inversely related. The felt need for control over such variables was an important factor leading to the development of the experimental paradigm to be described below.

The Attraction Paradigm

Byrne (1971), influenced by Kuhn (1962), argued that psychology should proceed by the gradual development and extension of 'paradigms'; a paradigm being 'a specific body of research which is accepted by a group of scientists and which consists of specific procedures, measuring devices, empirical laws and a specific theoretical superstructure' (Byrne 1971, pp.14-15). The 'theoretical superstructure' and measuring device (the IJS) developed by Byrne were described in the previous chapter.

The basic experimental procedure was adapted from Smith (1957; 1958).

In these studies Smith presented his subjects with two partially completed Allport-Vernon scales. These two scales were deliberately completed so as to be either similar or dissimilar to the way in which the subject had himself completed the form. The subject's task was to complete the forms as he thought the 'others' would have done and also to rate these two 'others' on his willingness to associate with them in leisure time and at work. On both of these scales the subjects were more willing to associate with the 'similar' other. Greater similarity was also 'projected' onto the similar other. Smith (1958) showed that this was true for both high valence and low valence values (i.e. the values the subject had scored highest and lowest on) but that the difference perceived between the similar and dissimilar other was greatest on high valence material.

Byrne (1961) modified this procedure by presenting subjects with a completed 26-item attitude scale which had been filled in, purportedly by another student but in fact by the experimenter, such that it corresponded exactly with the subjects own previously expressed attitudes, or such that the responses were a mirror image of the subjects. The subjects were then to rate the stranger, on the basis of his attitudes, on the IJS. The scores on the last two of the six scales, whether the subject liked or disliked the stranger and whether he would like or dislike to work with him, were summed to give an overall attraction response. With a possible range of 2-14 the mean attraction scores obtained were 13.00 for the similar group and 4.41 for the dissimilar group.

Byrne (1962), by using only attitudinal items which elicited heterogeneous responses, confirmed that the lower attractiveness of the dissimilar other was due to dissimilarity and not merely to deviation

from the norm. It was also found that subjects responded to the stranger's degree of similarity to themselves; a finding which was strengthened and extended by Byrne and Nelson (1965a) who showed that, within this paradigm at least, attraction was a linear function of proportion of similar attitudes.

$$\text{i.e.} \quad Y = m \left[\frac{\sum S}{\sum (S+D)} \right] + k$$

where Y is attraction, S and D are similar and dissimilar attitudes respectively, and m and k are empirically determined constants.

This finding of a linear relationship between attraction and proportion of similar attitudes, has been replicated so often within the basic paradigm that Byrne (1971) has felt justified in terming it an 'empirical law'. A large number of studies have shown that the 'law' stands when subjects other than American college students are used e.g. Byrne and Griffit (1966a) found the relationship to hold for children down to 9 years of age, while Gaynor et al (1972, reported in Griffit 1974) have extended this finding using children of kindergarten age as subjects, and Griffit et al (1972) confirmed the relationship held in a group with a mean age of 76. Byrne et al (1969) tested three groups of male hospital patients, surgical patients, alcoholics and schizophrenics and again found the relationship to hold. Byrne, Gouax et al (1971) found the relationship to generalise across cultures using students from Hawaii, India, Japan and Mexico.

Nor is the similarity-attraction law merely limited to the situation in which the subject is presented with a copy of the stranger's completed attitude scales. e.g. Byrne and Clore (1966) used a tape recorder, and Griffit and Jackson (1973) a video machine, to present the strangers attitudes. Even in these slightly more realistic situations the relationship held, as it does when indices of attraction,

other than the IJS have been used. Perhaps most dramatic of these are the findings of Griffit and Jackson (1973) who found that, in a simulated jury experiment, with the criminal evidence held constant, the similarity of the defendants attitudes to a juror's own had a significant effect on the juror's judgement of the defendant's guilt and on the length of sentence considered appropriate.

Why is Attitude Similarity Attractive?

The model presented by Byrne and Clore (1970) and Clore and Byrne (1974), and described in the last chapter, would imply that the answer to the question above is 'because it is reinforcing'. However this immediately begs the question 'why is attitude similarity reinforcing?' and it is this question which will be considered here. Byrne follows Festinger in assuming that people have a drive to evaluate their opinions and abilities. Since there are no objective criteria against which attitudes may be assessed, their evaluation depends upon their being compared with the attitudes of other people. The agreement of others provides 'consensual validation' of the attitudes involved while disagreement implies 'consensual invalidation'. Byrne and Clore (1967) argued that attitudinally similar others are liked because they provide consensual validation, thus satisfying the 'effectance motive' i.e. a learnt need to be logical and accurate in interpreting one's environment and effective in dealing with it. Exposure to dissimilar attitudes to one's own arouses a noxious drive state through consensual invalidation, while attitudinal agreement reduces this level of arousal (i.e. is rewarding).

In their experiments to test this explanation Byrne and Clore (1967) attempted to manipulate the level of effectance motive in their

subjects by showing them films. Arousal inducing films were produced by splicing together a number of totally unrelated scenes and combining them with an unpredictable soundtrack, thus producing ten minutes of 'continuing meaninglessness'. Subjects reported higher levels of effectance arousal (e.g. greater unease, feelings of unreality, confusion etc.) after viewing such films. Byrne and Clore hypothesised that subjects' arousal should interact with attitude similarity-dissimilarity in determining attraction to a hypothetical stranger. Specifically they predicted that aroused subjects would respond more positively to a similar stranger, and less positively to a dissimilar stranger, than would non-aroused subjects. In several studies a significant interaction was obtained; however it was in the direction opposite to that predicted, with aroused subjects differentiating less between similar and dissimilar strangers than non-aroused subjects.

Further study showed, however, that those subjects who were most aroused by exposure to dissimilar attitudes did like similar strangers more, and dissimilar strangers less, than did subjects who reported less effectance arousal in response to attitude dissimilarity. Byrne and Clore attempt to reconcile these findings by arguing that 'as effectance level increases, the attitude-attraction relationship is initially increased, but, as higher levels are reached, the attitude-attraction relationship is less than in a neutral situation' (p.15). The decrease in the degree of relationships being due to the 'disorganizing' and 'disorienting' effect of high levels of effectance arousal, such as were produced by watching the unpredictable films.

Discussion of the effectance motive, however, has not figured prominently in subsequent work. Palmer (1969, reported in Byrne 1971) made the distinction between a need to evaluate one's attitudes (effectance) and the need to vindicate them. It is the latter, Palmer

suggests, which mediates the similarity-attraction relationship. This argument was supported in an experiment in which both the competence and the attitude similarity of the bogus stranger was manipulated. Similarity and attraction were found to be more strongly related for the competent stranger. If the need for evaluation had been prominent then, Palmer argues, the dissimilar attitudes of a competent other would have been as useful (rewarding) as similar attitudes from the same source.

More recently the emphasis of the reinforcement theorists (e.g. Clore and Byrne 1974; Clore and Gormly 1974; Clore 1977) has fallen more on asserting the importance of emotional arousal in attraction in contrast to those emphasising cognitive information processing explanations (e.g. Kaplan and Anderson 1973; Ajzen 1977), than on investigating the nature of the arousal. However the assumption that similarity is reinforcing because it satisfies a need for consensual validation remains and has been adapted by Duck (1973b) as a central component of his explanation of developing friendship.

Extensions of the Attraction Paradigm

Starting from the 'base relationship' between attitude similarity and liking a large number of studies have been performed in extending the paradigm in a variety of directions. Some of this research which has some relevance to the main focus of this thesis is described below.

Topic Importance

It seems intuitively likely that if we are attracted to others who have similar attitudes to our own, then we will be particularly attracted to those who share our views on topics we consider to be of importance, rather than those who share our views on topics we consider to be of less importance. Despite Byrne and Rhamey's (1965)

modification of the Byrne-Norman formula to include just this possibility, actual evidence for the differential importance of attitudes in this respect, was not, at first, easily achieved.

It will be remembered from the previous chapter that Byrne and his associates have developed a classical conditioning model of attraction in which attitudinal similarity has the status of positive reinforcement. Other sorts of reinforcement are of course also possible and Byrne and Rhamey (1965) sought to generalise the Byrne-Norman formula so that it applied to reinforcement in general rather than to attitudinal similarity-dissimilarity only. They hypothesised that a personal evaluation of oneself by another would be a powerful determinant of attraction, having a greater effect than attitudinal similarity or dissimilarity.

They randomly assigned subjects to one of 12 groups, based on four levels of attitude similarity (1.00; .67; .33; .00) and three evaluation conditions (positive, negative or control). The attitude similarity-dissimilarity of the bogus stranger was manipulated in the usual way. Subjects in the positive and negative evaluation conditions along with the bogus attitude scales, also received a completed IJS on which the stranger had purportedly recorded his impression of the subject on the basis of the subject's attitudes. Subjects in the positive evaluation conditions were informed that the stranger considered them to be very much above average in intelligence, in knowledge of current events, to be moral, well-adjusted and as someone he would like very much and with whom he would very much enjoy working. Those in the negative evaluation conditions received a somewhat less

flattering portrait, while the control groups received no evaluation.

The results indicated that both attitude similarity and personal evaluations affected the subject's attraction for the stranger, with the personal evaluations having a more powerful effect. Byrne and Rhamey found that if personal evaluations items were weighted three times as heavily as attitude items then attraction would be described as a linear function of the proportion of weighted positive reinforcement.

This finding obviously holds out the possibility that attitudes themselves (as opposed to different types of reinforcement such as attitudes and personal evaluations) may be differentially weighted and therefore have differential effects on attraction. Early studies by Byrne and Nelson (1964, 1965b) however both failed to show any effect on attraction of importance of attitude; only similarity had a significant effect. Byrne, London and Griffit (1968) did however find that similarity on important topics had a greater effect than similarity on less important topics. The important distinction between their experimental design and those employed by Byrne and Nelson was that whereas in the latter's experiments all the attitude information given about any particular stranger had been at the same level of importance, in the Byrne et al (1968) study the bogus stranger expressed attitudes on more than one level of importance.

The Byrne-Rhamey formula would in fact have predicted this result since in the experiments in which the stranger's attitudes are homogeneous (in terms of importance) all weighting coefficients were equal and would therefore have cancelled out, meaning that topic importance would have no effect.

Banikiotes, Russell and Linden (1972) suggested that topic importance was especially relevant in a real-life friendship group.

They found that a 12 item attitude survey distinguished between real-life best-liked and least-liked individuals in a group of male undergraduates in that best-liked others were significantly more similar than least-liked others. However further analysis indicated that this effect was due almost entirely to similarity along one attitude dimension (that of 'political philosophy'), whereas using the bogus stranger technique with the same subjects indicated that it was proportion of similar attitudes, regardless of attitude topics which determined attraction. This may well indicate one important difference between real-life and laboratory situations, as Banknotes et al suggest. However a further study is needed here since the design of the bogus stranger part of their study does not systematically vary similarity and item importance as required by the Byrne-Rhamey formula, in order for differential weighting of items to play a part in determining the attraction response.

However Touhey (1972) in a computer dating study showed that real-life heterosexual attraction depended to some extent on the type of attitudes shared. Specifically he found that similar religious attitudes significantly affected the attraction of females to males, while the attraction of males to females was significantly associated with similar sexual attitudes.

Another concept related to topic importance is topic interest (Clore and Baldridge 1968). Clore and Baldridge argued that while we may consider an attitudinal topic to be abstractly 'important' this does not necessarily mean that we are interested in it. Their results indicated that both attitude similarity and level of interest in the topics on which similarity or dissimilarity was exhibited, had significant effects on attraction when the same stranger responded to

both interesting and uninteresting items (c.f. Byrne, et al 1968). One interesting item was found to have the weight of three uninteresting items in determining attraction.

Generally then both in the laboratory and in real-life situations the idea that similarity of important attitudes will have more effect on attraction than will similarity of unimportant attitudes seems reasonably well supported. To anticipate later discussion the relevance of this to the present research lies in signposting the way to some extent towards a perspective which recognises the importance of the individual's constructions.

Structural Similarity

Tesser (1971; 1972; Johnson and Tesser 1972) has identified two aspects of attitude similarity. The first, which he terms evaluative similarity, is the sort studied so intensively by Byrne and his colleagues i.e. proportion of attitude items answered in the same way. The second, structural similarity, is based on the relationships between attitudes held by any one individual. Two attitudes held by an individual are related to the extent that when one is changed the other also changes. The relationships between different attitudes will vary between different individuals, such that some people are more structurally similar in their attitudes than are others. For any two related attitudes if two individuals either agree on them both or disagree on them both then they are structurally similar in regard to these two attitudes. If however they agree on one and disagree on the other then they are structurally dissimilar.

Tesser (1971) hypothesised that subjects would be able to perceive structural similarity and that attraction would be positively related

to such similarity. Both hypotheses were supported in an experiment which involved subjects being faced with four bogus strangers - each representing one of the possible combinations of high or low evaluative similarity and high or low structural similarity. Subjects rated each of the bogus strangers on the IJS and on a number of other scales.

The results supported the hypotheses. Structurally similar others were perceived as being more consistent and predictable than structurally dissimilar others. Evaluative similarity did not affect ratings on these dimensions. Also, although the effect was not as strong as with evaluative similarity, structural similarity significantly affected attraction scores.

Johnson and Tesser (1972) went on to examine the hypothesis, provoked by the above results, that structural similarity was especially attractive in situations in which we wish to predict the behaviour of the other. Their results supported this hypothesis. Interestingly structural similarity was negatively related to attraction in a 'representative' (i.e. where the other was to 'stand in' for the subject) as opposed to 'predictive' situation. Evaluative similarity was significantly related to attraction in both situations though to much less an extent in the 'predictive' situation.

Taken together the above results support the usefulness of a distinction between attitude content and structure and indicate that despite its lower degree of 'visibility' similarity of attitude structure can be perceived by subjects, within the bogus stranger paradigm, and has an effect upon their attraction responses. Whether this effect is present in real-life relationships remains to be seen, however the content-structure distinction is one that will be returned to in discussion of personal construct systems and friendship.

Predictability

The relationship between similarity and predictability suggested by Johnson and Tesser (1972) has been echoed by Touhey (1973). He argued that the role of attitude similarity in attraction lies in making another's behaviour easier to predict, whereas large attitudinal discrepancy makes another's behaviour unpredictable. Therefore it follows that when we have problems in predicting another's behaviour any sign of attitude similarity would be welcome, because of the promise of improved prediction it holds, and therefore attractive. If however we are able to predict the other's behaviour then evidence of attitudinal similarity may be unwelcome since the other would then be seen as 'too predictable' i.e. boring.

Touhey tested these hypotheses in a non-experimental design which involved subjects filling out an attitude scale, observing an interview with a stimulus person, attempting to predict this other's attitudes, checking their predictions with the stimulus person's actual attitudes, and finally rating this person on the IJS. From the data three levels each of attitude similarity and of attitude predictability were derived. The two main effects of these variables on attraction were non-significant; however the interaction was significant and the mean attraction scores were in the direction predicted by the hypotheses. Thus in the high predictability 'condition' there was an inverse relationship between attitude similarity and attraction, while in the low predictability 'condition' the usual positive relationship between attitude similarity and attraction was obtained.

An interesting replication of Touhey's study would involve separating out the effects of 'evaluative similarity' and of 'structural similarity' since the work of Johnson and Tesser (1972) would suggest

that it would be the latter form of similarity rather than the former which would interact with predictability. Touhey does not consider this possibility. A further point which seems worthy of investigation is whether high predictability plus high attitude similarity would be 'boring' in situations where the subject was led to expect actual interaction with the stimulus person, or further in which the subject and the other were engaged in any sort of real-life relationship. Here the combination of high attitudinal predictability and similarity might be welcomed as being indicative of similarity and predictability of deeper aspects of the personality (c.f. Duck 1977a).

Certainly Touhey's study provides an important example of an inverse relationship between attitude similarity and attraction. As he points out his findings are reminiscent of those of Walster and Walster (1963). They found that if student subjects were assured that whichever discussion group (of five) they chose they would be liked by the members, then the subjects much preferred to enter a group which was dissimilar to themselves (i.e. a group consisting of non-students). Subjects told to choose a group where members would like them, and subjects told they would be disliked whichever group they entered, preferred similar groups. These findings suggest that information about another's attitudes is not passively reacted to but is used as the basis for inferences about other characteristics of the individual involved such as whether he will be predictable or whether he will like us.

Individual Differences

As with topic importance it seems intuitively plausible, at least, to suggest that people may differ in the tendency to react positively to

attitudinally similar others and negatively to attitudinally dissimilar others. And further that these individual differences will be systematic and consistent and hence describable in terms of personality traits. It may well be due to the problems involved in trait approaches to personality (c.f. Mischel 1968), rather than anything wrong with the basic assumption that people do differ in their response to attitude similarity-dissimilarity, that has led to a 'plethora of negative findings and of somewhat 'mushy' findings.' (Byrne 1971, p.213).

Typical of these are the findings of Wiener (1970) whose subjects completed five personality tests (i.e. Marlowe-Crowne Social Desirability, the test anxiety questionnaire, Edwards Social Desirability Scale, the D-30 Depression Scale, and Leary's Interpersonal Checklist) before being presented with the similar or dissimilar attitudes of a bogus stranger. The failure of these personality variables to mediate attraction toward the stranger was almost complete.

In general, studies of the effect of individual differences on the similarity-attraction relationship have produced either non-significant or inconsistent results. For example, authoritarianism, as measured by the F-scale, has been found to have no effect on the similarity-attraction relationship regardless of whether the attitudes presented are not related to authoritarianism (Byrne 1965) or are issues upon which authoritarians and non-authoritarians differ (Sheffield and Byrne 1967); dogmatism, however, was found by Gormly and Clore (1969) to interact to an almost significant extent ($p < .07$) with attitude similarity.

Studies by Leonard (1975; 1976) are important in that they suggest that the effects of differences between individuals, at least on two traits, may be more powerful in modifying the attitude similarity-attraction relationship, in situations which involve responding to a real, rather than hypothetical stranger.

Leonard (1976) investigated the effect of individual differences

in cognitive complexity on the similarity-attraction relationship. Baskett (1968, reported in Byrne 1971) and Black (1971) had previously tested the hypothesis that cognitively complex subjects would respond less extremely to both attitudinally similar and dissimilar strangers; in neither study was the hypothesis supported. In his discussion of his results Black argues that the failure of the personality variable to modify the similarity-attraction relationship is due to the experimental paradigm involved which restricts the amount of information available to the subject; information which is so straightforward and uninvolved that it allows no opportunity for individual differences in complexity of information processing to be brought to bear. Leonard overcame this problem by having his subjects conduct a face-to-face interview with the person they were to evaluate, who role-played the part of a job applicant. Subjects were given, prior to the interview, some background information about the 'applicant'. This information, which included attitudinal information, was engineered to be either similar or dissimilar to the subject's own background and opinions. The subjects were provided with a list of questions to ask the confederate who had been 'thoroughly trained' to play a consistent role.

Leonard's hypothesis was different from that of Baskett and of Black. Rather than being based on findings indicating that cognitively simple judges are more likely to make extreme responses, Leonard's hypothesis was based upon findings of the greater perceptual accuracy of complex judges.¹ He hypothesised that despite the 'complex multi-

¹ See chapter 4.

dimensional stimulus' with which they were faced, cognitively complex subjects would perceive correctly the degree of similarity between themselves and the interviewee, whom they would evaluate accordingly. Cognitively simple subjects, on the other hand, would be much less likely to perceive accurately and therefore would be correspondingly less likely to be attracted more to a similar interviewee than to a dissimilar one.

The results indicated that the subjects' ratings of the confederates overall attractiveness were significantly affected by both similarity and by the interaction between cognitive complexity and similarity. The interaction was due to cognitively simple judges not responding differentially to similar and dissimilar others and to the tendency for dissimilar others to be rated more negatively by complex than by cognitively simple subjects. Leonard's hypothesis was therefore supported; however, although as a manipulation check he had his subjects rate the confederate in terms of similarity to themselves, he does not present data to show that cognitively complex subjects were more accurate in their perceptions as his hypothesis demands that they should be.

Leonard (1975) using a similar procedure found that subjects' level of self-esteem also modified the similarity-attraction relationship. Hendrick and Page (1970) had failed to obtain this effect in a standard bogus stranger design and it may be that the effects of individual differences are more important in real-life than the negative findings of attraction paradigm studies would suggest.

CHAPTER NINE

The Generality of the Attraction Paradigm

The usual bogus stranger experiment bears little relationship to the real-life interactions of strangers, and the most common criticisms of Byrne's approach are based on this fact. Thus Byrne and his colleagues are seen as investigating an essentially trivial situation (e.g. Taylor 1970) which has little, if any, relevance to real-life (e.g. Murstein 1971a). Clore and Byrne (1974) argue that such criticisms are both atheoretical (presumably since it is possible to produce a valid theory of trivia) and mistaken in that it has always been the intention of attraction paradigm researchers to eventually apply their knowledge to naturalistic settings, once enough information is known about the relevant variables involved i.e. 'the understanding of complex situations requires a step-by-step process, originating from a simple base relationship, until more and more variables can be considered and more sophisticated empirical laws derived. Byrne is obviously aware of the difficulties involved in direct extrapolation to real-life:

e.g. 'if all an experimental subject knows about a stranger is that he holds opinions similar to his own on six out of six political issues, the stranger will be liked ... [but] ... any two interacting individuals ... (a) ... may never get round to discussing these six topics at all, and (b) even if these topics are discussed, six positive reinforcements may simply become an insignificant portion of a host of other positive and negative reinforcing elements in the interaction. A second barrier ... lies in the nature of the

response ... The relationship between that paper-and-pencil measure [the IJS] and other interpersonal responses is only beginning to be explained. The third barrier ... the laboratory study of attraction is limited in its time span and might legitimately be labelled the study of first impressions. Whether the determinants of first impressions are precisely the same as the determinants of a prolonged friendship, of love, or of marital happiness is an empirical question and one requiring a great deal of research.'

(Byrne, Ervin and Lamberth 1970 p.158)

For Byrne then there is no problem in principle in the eventual application of attraction paradigm research to real-life encounters; the wheels of the scientific grindstone merely need to keep revolving. Those not of the faith, however, require some empirical support for the generality of attraction paradigm research. In line with Byrne's methodological stance a number of studies have been done in which the context of attitudinal similarity-dissimilarity has been varied by providing subjects with slightly more information than in the basic paradigm but very few studies have extended the research into more naturalistic settings. These latter studies will be discussed after a selective review of the more common experimental studies in which subjects have been presented with information about either the attitudes of more than one stranger or about other characteristics of the stranger.

The Context of Attitude Similarity: the attitudes of other bogus strangers

A number of studies, using a within-subjects design, have involved the systematic variation of the number of agreeing and disagreeing strangers that any particular subject is exposed to. For example

Stapert and Clore (1969) hypothesized that attraction towards an agreeing stranger would be a function of the number of disagreeers already presented. Each of their subjects received either two, three or four attitude scales, containing the same items, from similar or dissimilar bogus strangers. Each stranger was evaluated on the IJS before the next attitude scale was read. The results supported the hypothesis i.e. attraction toward a similar other decreased as the number of previous disagreeing strangers also decreased.

Griffit (1971) obtained similar results when two strangers, on a tape, responded to alternate questions on an attitude scale, i.e. the strangers responded almost simultaneously and were rated after all responses had been heard. Griffit found that when paired with a disagreeing other, an agreeing stranger was liked more than when paired with another agreeing stranger, while a disagreeing stranger was liked less when paired with an agreeing stranger than when paired with another disagreeing stranger.

Mascaro and Graves (1973) presented subjects with the political attitudes of two strangers. The first stranger's attitudes agreed with the subjects at a high (.90), medium (.50) or low (.10) level, while the second stranger always expressed a medium (.50) level of similarity. It was found that both the perceived similarity of, and attraction towards, the second stranger was significantly affected by the manipulation of the first strangers attitudes. Highest perceived similarity and attraction to the second stranger was obtained when the first stranger exhibited a low degree of similarity, while lowest perceived similarity and attraction to the second stranger occurred when the first stranger was highly similar to the subject.

Kaplan and Olczak (1971) pre-selected subjects with either a minority or a majority opinion on issues on which there was high agreement among college students. Subjects interacted with a friendly confederate who agreed with either 75% or 25% of the subjects' responses on a particular issue. A significant interaction between similarity and the commonness of the subjects' attitudes was obtained indicating that similar others were particularly attractive for subjects holding minority opinions.

Such studies as these, while not being naturalistic or concerned with real-life relationships, do indicate the importance of a slightly wider context than is usually considered within the basic paradigm, as well as having possible implications for hypotheses to be tested in real-life groups.

The Context of Attitude Similarity: other characteristics of the stranger

Knowledge of another's attitudes is not usually gained in the absence of any other information about them and attempts to study the effects of other information about the stranger on the attitude similarity-attraction relationship have been made. A number of different kinds of additional information have been examined and a selection will be discussed below.

Physical Attractiveness

The powerful effects of physical attractiveness on both liking and attributions of other characteristics are well documented (Berscheid and Walster 1974b; Adams 1977). Experiments by Byrne, London and Reeves (1968) and Stroebe et al (1971) involved presenting subjects with a photograph, supposedly of the bogus stranger, along with the usual attitude information. In both studies attractiveness and attitude similarity influenced attraction ratings but there was no interaction between

them. In the studies of Byrne et al (1970) and Black (1974) both the physical attractiveness and the attitude similarity of a date independently influenced attraction ratings after face-to-face interaction.

The above studies indicate that physical attractiveness affects attraction without interacting in any way with the parallel effects of attitude similarity. Kleck and Rubenstein (1975), however, found that male subjects' ratings of a female confederate were determined only by whether she was made up to look attractive or unattractive, and not at all by her degree of attitude similarity to the subject. This was so for both attraction ratings made at the time of the experiment and for ratings made two to four weeks later. As one possible explanation for the lack of a similarity effect the authors suggest that the manner in which the attitude information was exchanged may have produced uncomfortableness in the subjects. This is because the attitudes were expressed in a way such that on every item the confederate expressed her (pre-arranged) opinion first followed by the subject. Kleck and Rubenstein suggest that in the high-similarity condition subjects may have feared that the confederate would feel that they were trying to ingratiate themselves with her.

The findings of Kleck and Rubenstein have, however, been mirrored in a real-life setting (Cavior et al 1975). In this study two groups of adolescents were studied; in both groups liking for same-sex others and dating preference for opposite-sex others were strongly related to physical attractiveness and, to a lesser extent, to perceived attitude similarity. However actual attitude similarity was not at all related to liking or dating preference.

Such a finding obviously contradicts, not only the findings of Byrne, but also those studies such as Newcomb's (1961) which found evidence for the importance of attitude similarity in real-life friendships,

though the important factor here may be the very low relationship between actual and perceived attitude similarity in the Cavior et al study. Perhaps the older subjects used in most studies have more insight into other people's attitudes, or are less afraid to express their true opinions.

Maladjustment.

Novak and Lerner (1968) hypothesized that a similar handicapped other would be threatening ('if it can happen to him it can happen to me') and therefore would be avoided. Their experiment involved a typical attitude similarity manipulation, but half of the subjects were allowed to see, seemingly inadvertently, information that the stranger had had a nervous breakdown from which he had still not fully recovered. The results indicated a significant interaction between similarity and emotional disturbance on the IJS attraction measure. Similar others were preferred in both the 'normal' and the emotionally disturbed conditions, but the effect was much weaker in the latter than in the former.

Emotional disturbance then seems to provide a modifying context for the similarity-attraction relationship. The effect though seems to be sensitive. Byrne and Lamberth (1971) and Bleda (1974) both failed to replicate Novak and Lerner's findings in a situation in which no evidence was given to the subject that he was not supposed to have seen the personal information about the stranger. Byrne and Lamberth did find an interaction however when they followed the Novak and Lerner procedure, giving the subjects the impression that they had been handed the personal information by mistake.

Byrne and Lamberth (1971), in their further investigation of the interaction, provide a good example of the strengths of their reinforcement

theory. They argue that the emotional disturbance of the stranger can be viewed as a stimulus with both positive and negative aspects. Specifically they argue, working backwards from the data, that such information is equivalent, in reinforcement terms, to a combination of 11 similar attitudes and 22 dissimilar attitudes. By suitable manipulation of the proportion of similar attitudes received in the disturbed stranger condition, they performed an experiment in which the Novak and Lerner interaction effect was eliminated. It was also not found in a second experiment which involved presenting subjects in the normal stranger condition with personal evaluations roughly equivalent with the hypothesised reinforcement values of emotional disturbance. These findings were taken as evidence that the effect of the stranger's emotional disturbance can be incorporated within the reinforcement framework.¹

Such a simple additive model is not enough, however, to explain the finding of Taylor and Mettee (1971) that a similar other who behaved obnoxiously was disliked more than a dissimilar other who behaved obnoxiously, for using the Byrne and Lamberth approach would mean that a similar other could never be liked less than a dissimilar other. Only a perspective which allows for shifts in the meaning of information according to context can account for such a result.

¹ Perhaps more convincing evidence that emotional disturbance per se was not the crucial factor would have involved an experiment in which the interaction effect was replicated, but in which the disturbed stranger condition was replaced by a condition which recreated its reinforcement value but in an entirely different manner e.g. by suitable combinations of similar and dissimilar attitudes.

Personal Evaluations.

A number of studies have investigated the effects of presenting subjects with evaluations of themselves purportedly made by the stranger as well as with information about the stranger's attitudes. Byrne and Rhamey's (1965) was described earlier. They found that both attitude similarity and favourability of evaluation affected attraction ratings with one personal evaluation having the weight of three similar or dissimilar attitudes.

Aronson and Worchel (1966) argued that the attractiveness of an attitudinally similar other is based on our assumption that he will like us, and therefore in a face-to-face encounter attitude similarity-dissimilarity will have no effect if we have direct evidence as to the other person's feelings for us. They arranged a situation in which a subject interacted with a confederate who either agreed or disagreed on five out of seven attitude items. Following this the two were instructed to write some comments about the other. The confederate wrote that either he had enjoyed or had not enjoyed working with the subject and that he found him to be either 'really profound and interesting ... well-informed' or 'really shallow and uninteresting..., not well-informed'. These written comments were exchanged and the subjects then evaluated the confederate on the IJS. Only the main effect for positive vs. negative evaluation was found to be significant. The effect of similarity was not significant, though Aronson and Worchel concede that the similar confederate was preferred in both the personal evaluation conditions and that perhaps an increase in the number of attitudes compared would have strengthened the similarity effect.

Byrne and Griffit (1966b) argued that Aronson and Worchel's results were due to just this restriction in the range of attitude similarity. They also used a seven-item scale but the confederate either agreed or

disagreed on all seven items. In other respects their procedure was the same as Aronson and Worchel's. The results indicated that both main effects were significant and further that the weights determined by Byrne and Rhamey (1965) for personal evaluation items and attitude items (i.e. 3:1) also fitted the data of their experiment.

Byrne, Rasche and Kelley (1974) further indicated the powerful effect of personal evaluations. Their subjects communicated either their true attitudes or the opposite of these and were subsequently evaluated by a confederate. The results showed that subjects 'correctly' perceived the confederates attitudes but that attraction toward the confederate was a function both of similarity and of personal evaluation i.e. even when the subject communicated false attitudes and was liked, he was more attracted to the confederate than when he communicated his true attitudes and was disliked, despite the fact that in both conditions he knew that he and the confederate had dissimilar attitudes. The same effect was obtained in the similarity conditions.

The study of Jones, Bell and Aronson (1972) is notable mainly for its implication of the possible complexity involved in the assessment of context effects. Arguing that the knowledge of similarity or dissimilarity with another arouses expectancies as to the other person's feelings for us, these authors suggested that the effects of similarity and personal evaluations are not simply additive as argued by Byrne and his colleagues. According to Jones et al subjects in the dissimilarity-positive evaluation situation have had a very nice surprise, since they would expect not to be liked, and would therefore be more attracted to the other person, who presumably based his evaluation on insight into their true characters, than to the other person in the similarity-positive evaluation condition who merely conformed to

expectations. Conversely, subjects in the similarity-negative evaluation condition, expecting to be liked, have had rather a nasty shock and will dislike the other person more than in the dissimilarity-negative evaluation condition where the evaluation had at least been consistent.

Jones et al argue that other studies had not found this 'expectancy-violation' effect because the evaluations in these studies had been based only or mainly on the attitude information exchanged i.e. the two types of information were not independent. They therefore arranged a situation in which the confederates positive or negative reactions were independent of the degree of attitude similarity. Using a bogus pipeline measure of attraction toward the confederate it was found that the means were in the order predicted by the expectancy-violation hypothesis but the interaction between similarity and evaluation was just short of significance. The main effect of similarity was not significant on the bogus pipeline measure, scales measuring 'social attraction' nor scales measuring perceived 'competence'. On all three of these measures the effect of positive vs. negative evaluation was highly significant.

Because the (female) confederate used in the first study was 'extremely attractive', and because Sigall and Aronson (1969) had previously found physical attractiveness and personal evaluation to interact in determining attraction, the study was repeated using a confederate of only average attractiveness. The results this time supported Byrne's view that personal evaluations produce an effect which may be added to the effects of attitude similarity. This time attitude similarity did produce significantly more attraction as measured by the rating scales, but not by the bogus pipeline measure.

Jones et al suggest that the difference between the two experiments lies in the extent of subjects' involvement i.e. it is proposed that subjects cared more whether or not they were liked by the very attractive confederate than did subjects evaluated by the averagely attractive confederate, who therefore could remain calm and rational when completing the rating scales.

Whether or not this explanation is accepted does not affect the implications of the study that firstly, the context within which attitude similarity is experienced is very important in determining its effects and secondly that the effects of two types of information (e.g. attitude similarity; personal evaluations) may be completely altered by the addition of a third variable (e.g. physical attractiveness) suggesting that such interactions may become very complex as the number of variables considered together is increased, and therefore questioning the ultimate practicality of continuing to attempt the slow step-by-step analysis of individual stimuli advocated by Byrne. (c.f. Thorngate 1976).

Attitude Base

A number of theorists have suggested that attitudes serve various functions for the individual (e.g. Smith, Bruner and White 1956; Katz 1960). Katz (1960) argues that there are four main functions of attitudes: the adjustment (or utilitarian) function; the ego-defensive function; the knowledge function and the value-expressive function. Batchelor and Tesser (1971) argued that the function a particular attitude serves for another will be taken into account in our evaluation of that other. They hypothesised specifically that value-expressive bases for attitudes would be relatively valued, while ego-defensive bases would be negatively regarded.

In order to test this hypothesis they compared four descriptions of different reasons for holding an attitude, each description corresponding to a particular attitude base (i.e. function). These were presented to their subjects along with the usual type of attitude information in a number of different tasks.

The results showed the usual effect of attitude similarity on attraction. It was also found that for any particular attitude a value-expressive reason for holding it was preferred while an ego-defensive base was least liked. Further the effects of attitude similarity-dissimilarity on attraction were much weaker when the attitude rested on an ego-defensive than on any other base. Subjects were also found to assume that if another individual agreed with them on a particular issue then he held the attitude for value-expressive reasons; and conversely if told that an individual held an attitude for value-expressive reasons subjects tended to infer that the direction of the attitude held was similar to their own.

The importance of this study lies in its pointing to the great importance of inference, of 'going beyond the information given', in attraction research; an aspect of interpersonal judgement which has tended to be overlooked within the attraction paradigm. Interviews with the subjects revealed that many of them were inferring a more attractive personality on the basis of a value-expressive, rather than ego-defensive base.

Duck (1975a) has followed up this line of research. In a typical bogus stranger experiment he manipulated both similarity of attitude and similarity of the reason behind the attitude. Both of these had significant effects on attraction towards the stranger. The interaction was not significant. Again there was evidence that in the face of no

evidence to the contrary subjects assume that another holding similar attitudes to themselves holds them for similar reasons. This perhaps indicates that the effects of attitude similarity have been exaggerated in the attraction paradigm where, in the absence of further information, subjects have assumed the existence of 'deeper' (i.e. attitude base) similarity. In real-life attitudes are discussed in relation to the reasons they are held, or some information, other than the attitudes themselves, is available to provide a wider basis for the attribution of these reasons.

Attitude Commitment

Veitch and Griffit (1973) presented subjects with information about a bogus stranger's attitudes and the extent to which he was committed to them. A significant interaction between similarity and commitment was obtained such that the usual similarity effect was greatest when the stranger was committed while subjects were significantly less attracted to an uncommitted similar stranger than to a committed similar stranger.

Attraction for Non-Bogus Strangers and Other Real People

Studies such as those described above are obviously only relatively and then only slightly 'nearer' to real-life than the basic attraction paradigm studies. Despite this essential lack of complexity, in terms of variables under investigation, the attitude similarity-attraction relationship has been found to be attenuated (e.g. Novak and Lerner 1968; Veitch and Griffit 1973) or even reversed (e.g. Taylor and Mettee 1971) when certain other information, apart from the stranger's attitudes, is

available to the subject. That such effects of context on the similarity-attraction relationship can be so easily produced in the laboratory make it highly plausible to argue that in a real-life situation where the number of relevant contextual variables must be very large indeed then the effects of attitude similarity on attraction may well be totally swamped by the effects of all the other variables. Such an argument would, however be contradicted by the many correlational studies which have found a relationship between similarity and attraction, especially that of Newcomb (1961; 1963) which provided evidence that similarity preceded attraction rather than vice-versa.

Also in contradiction to this argument are the results of a couple of studies which have extended the attraction paradigm to include actual interaction. The first of these was performed by Byrne, Ervin and Lamberth (1970) who investigated cross-sex attraction in a 'computer dating' situation. Pairs of subjects were selected on the basis of high or low similarity, as measured by a fifty item questionnaire which contained items concerned with selected personality characteristics as well as attitudinal items. Each couple selected were introduced and sent on a thirty minute 'coke date' at the Students Union, the object being for them to get to know each other. On their return the couple rated each other on various scales, including the IJS attraction measure. It was found that similarity significantly predicted post-acquaintance ratings of attraction for both sexes, as well as ratings of the date's intelligence, desirability as a date and as a marriage partner. These results were taken by the authors as indicating a continuity between the laboratory and real-life.

In this study however the period of interaction was brief and therefore the criticism that Byrne is dealing with first impressions only

is not avoided. A later study by Griffit and Veitch (1974) did involve longer and presumably more intense interaction. These authors studied a group of thirteen previously unacquainted males who lived together for ten days under simulated fall-out shelter conditions. Pre-acquaintance attitude similarity, assessed one day before the men met, was found to be significantly related to attraction (as measured by sociometric choices) on all three occasions when this was assessed i.e. the end of the first, fifth and ninth days.

Despite these results the continuity between laboratory experiments and these studies remains only an assumption for there remains an enormous gap between the two types of study in terms of the number and nature of the variables involved. The fact that parallel results are obtained in the two situations does not mean that the same processes must be responsible. A very large number of intervening studies would be required in order to demonstrate the claimed continuity between the laboratory and real-life. The feasibility of such a large research programme is doubtful; for example the experimental methodology used in attraction paradigm studies severely limits the number of variables which could be considered within any one investigation (c.f. Thorngate 1976).

Another constraint on the generality of the laboratory studies is one mentioned by Byrne et al (1970), and that concerns the possibility of attitude similarity, as a determinant of attraction, being 'swamped' by the effects of all the other information present in a face-to-face encounter. A recent study by Kandel (1978) demonstrates that while attitude similarity may play some part in determining friendship, it is a very small part. In a large-scale study, involving over 1800 adolescents, friends were found to be significantly similar in their attitudes but the relationships were slight and were far stronger

for similarity in terms of reported behaviours and, particularly, sociodemographic characteristics.

Banikiotes, Russell and Linden (1972) provide a rare example of a direct comparison between real-life friendship and reactions to bogus attitude scales. They presented their subjects with four attitude scales: two of which were bogus and two of which were the protocols of other subjects, who were all members of the same student living group. The two bogus scales were filled in so as to be either highly similar or highly dissimilar to the subjects own attitudes; the real attitude scales were those which had been completed by the two other individuals whom the subject had reported liking most and least.

The four attitude scales were presented to the subjects as having been completed by students from another university, and the standard attraction paradigm procedure was followed with an IJS being completed after the inspection of each protocol. IJS ratings of the four protocols were all significantly different from each other in the order of (highest ratings first) bogus similar; best liked persons; least liked persons; bogus dissimilar.

Thus, as far as attitudes are concerned, there does seem to be some similarity between the way subjects respond to bogus attitude scales and the way they respond to real attitude scales; further since the way the subjects responded to the real scales reflected the way in which they responded to the people who had actually completed the scales, then, it can be argued, reactions to bogus attitude scales do bear some resemblance to reactions to people.

Best liked pairs were found to have significantly more similar attitudes than least liked pairs; however this finding does not provide

unequivocal support for the continuity of 'artificial stranger' research and studies of actual friendships. This is because only one (that concerning political philosophy) of twelve attitude items significantly differentiated in this way. Banikiotes et al suggest that this indicates a greater effect of agreement on important (versus less important) topics in real-life relations than is typically found in laboratory experiments.

Another study which involves both real-life relationships and responses to bogus attitude scales is that of McCarthy and Duck (1976). In this study subjects were given bogus attitude scales which they were told represented the attitudes of a friend of theirs, thus the reverse procedure to that used by Banikiotes et al (1972) was adopted. McCarthy and Duck hypothesized that although high similarity of attitudes is attractive in the very earliest stages of acquaintance (as simulated in Byrne's studies) and once friendships have become established, in what the authors term 'tentative' friendships a degree of dissimilarity will be preferred because of its 'stimulation' value.

The first experiment which tested this hypothesis involved a 3 x 3 design with three levels of friendship 'stage' and three levels of attitude similarity. The three stages of friendship were:-

(1) Fictitious stranger: this involved a replication of the usual attraction paradigm manipulation.

(2) 'Tentative' friendship: pairs of friends who had been friends for 1-6 months. The bogus attitude scales were presented to the individuals as being the scales completed by their friend.

This same procedure was followed in the third stage which was that of

(3) Established friendships: here the friendships had lasted at least twelve months.

The bogus attitude scales were completed so as to be either (a) exactly the same as the subjects; (b) mildly dissimilar, which involved similarity on five attitudes that the subject had labelled as important to him and on two attitudes which he considered unimportant. The dissimilarity was on three unimportant attitudes, or (c) highly dissimilar in which the scales were completed so as to be similar on the five important items, but dissimilar on the five unimportant items.

After studying the scale each subject rated his partner on the IJS. The results supported the hypothesis: in both the fictitious stranger group and the established friendship group total similarity was preferred with high dissimilarity being least attractive. In the tentative friendship group however mild dissimilarity was preferred with total similarity being least attractive. A second experiment which split the tentative friendship groups into friendships of 1-3 months, and of 3-6 months, showed that whereas mild dissimilarity was preferred by the 1-3 months group, 'high' dissimilarity was most attractive in friends of 3-6 months standing.

Both the study of Banikiotes et al and that of McCarthy and Duck indicate that there is some hope that the laboratory procedures used by Byrne and his associates are not completely cut-off from studies of real life relationships, i.e. that 'intervening' studies can be devised. However many more of these studies would need to be performed for a link to be established, and it is not at all clear that the establishment of such a link would follow from such studies. As an example of the problems involved the results of the McCarthy and Duck experiments indicate the importance of the fact that real-life relationships develop over time, and that what may be attractive at one stage of a relationship may not be at another stage. Such a finding has the implications that the

attractiveness of any information about another person depends upon the meaning it has for the individual involved, and further that this meaning does not remain constant over time. For an approach which, while recognising the importance of cognition (cf. Byrne and Lamberth 1971, Clore and Byrne 1974), has been concerned mainly with stimulus-response connections, the importance of meaning obviously raises problems of a theoretical nature. It also brings further into question the claimed continuity between the findings of laboratory experiments and the studies of Byrne et al (1970) and Griffit and Veitch, since the importance of attitude similarity in determining attraction may rest on entirely different foundations in the two types of situation.

The realisation of the importance of considering relationship development has been a major factor in the decline of the attraction paradigm as the major approach to the study of interpersonal attraction (cf. Huston and Levinger 1978). It can be questioned whether the traditional attraction paradigm study simulates any stage of a real-life relationship, since information about another's attitudes is normally preceded by a host of other information, e.g. about how the other person looks, which provides a context within which the meaning of the attitude information is assessed (cf. Duck and Craig 1975).

Byrne's hope that the complexities of real-life could be approached via very simple laboratory situations has not been fulfilled. To critics of traditional social psychological approaches such a lack of fulfillment would come as no surprise (e.g. Harre and Secord 1972; McGuire 1973; Gergen 1978). For these writers complex social behaviour is not simply an additive function of simple behaviours. Harre and Secord have no doubts; Byrne's experiments, they write, 'tell us nothing about the genesis of liking and friendship among real people'

(p.52). Such a view seems too extreme for, if nothing else, the attraction paradigm experiments tell us something of the beliefs which people hold about the determinants of friendship, and these beliefs are presumably not totally unrelated to the ways in which people actually carry on (cf. the finding of Banikiotes et al (1972) that subjects responded more positively to the attitudes of best liked others than of least liked others). In this case then these experiments at least may be useful in suggesting some of the features of our everyday conceptions of friendship, and in suggesting possible variables for study in real-life relationships. This of course does not provide an argument for continuing to perform such experiments, but rather a justification for not merely discarding the findings of those experiments already performed. While such experiments may not provide the best route to an understanding of friendships they may at least be suggestive.

CHAPTER TEN

Interpersonal Attraction and Personality

The literature on the relationship between personality and liking is somewhat confused and, most of the major traditional theoretical and methodological approaches to interpersonal attraction having been introduced, only a brief review will be given here. (See Duck 1977b for a more comprehensive review). Although the emphasis here will be on similarity (and complementarity) an individual's personality may have a more direct effect on his relationships. Thus it is a common observation that some people are more popular than others and research has indicated, for example, that individuals with an internal locus of control are more attractive than externals (Phares and Wilson 1971; Johnson and Cerreto 1975; Nowicki and Blumberg 1975). It is not surprising that individuals seen to possess certain personality characteristics should be more popular than individuals not so perceived, given the basic evaluative nature of most judgements (Osgood et al 1957) and of many trait labels (Anderson 1968). However, personality tests and inventories have, on the whole, failed to identify such popular individuals (e.g. extraversion has been found to be both positively and negatively related to attraction, by Hendrick and Brown (1971) and Banikiotes et al (1972) respectively). This may be due to the problems surrounding the use of such tests (Mischel 1968).

The personality of the chooser, as well as that of the chosen, may also have an effect as the research on the reactions of high and low self-esteem subjects to personal evaluations (Stroebe 1977) or to similar and dissimilar strangers (Leonard 1975) demonstrates. Other personality

variables found to interact with attitude similarity in determining attraction include cognitive complexity (Leonard 1976) and insecurity (Goldstein and Rosenfeld 1969).

Personality Similarity versus Complementarity

The notion that husbands and wives, friends etc. have similar personality characteristics was tested in a number of early studies. Richardson (1939), reviewing these, noted that while married couples did seem to be slightly similar in temperament the similarity was less than that found for attitudinal and intellectual characteristics. Similar results were obtained in studies of friendship e.g. Vreeland and Corey (1935) obtained a correlation of 0.33 between the Neurotic Tendency scores of same-sex college friends. Bonney (1946) and Reader and English (1947) also found a slight tendency for friendships to be characterised by personality similarity but Pintner et al (1937) found no relationship with personality similarity in their study of friendship in school-children.

The first major theoretical impetus to research into interpersonal attraction and the relation between the personalities involved, was provided by Winch (e.g. Winch 1958). Winch proposed that marital choice could be explained in terms of the complementary needs of the husband and wife, i.e. that requited love involves the mutual gratification of needs. Evidence for the theory came from an intensive study of 25 young married couples - the needs of the subjects being assessed using clinical, rather than psychometric techniques.

Although this original study has been criticised (e.g. by Tharp 1963) the complementary needs hypothesis has proved popular and has been generalised to cover relationships other than marriage. A number of

studies have contrasted complementarity and similarity of personality as possible antecedants of attraction. In so doing they have deviated somewhat from the methodology of Winch in that questionnaires, rather than interviews, have been the major assessment techniques used. The most widely used of these questionnaires has been the Edwards Personal Preference Schedule (EPPS) which is designed to tap needs essentially similar to those discussed by Winch. Using this test, Bowerman and Day (1956) investigated the need patterns of couples who were either engaged or 'going steady'. No support for the complementarity hypothesis was obtained.

Recent studies by Curran (1973) and Meyer and Pepper (1977) also fail to provide support for the hypothesis. In Curran's study however the situation was far removed from that studied by Winch; subjects were recruited by establishing a computer dating service and attraction measures were taken after only one date - the relationship of these measures to possible marital choice is obviously questionable. Secondly subjects were assigned to their partners such that the pair had either similar, dissimilar or unrelated personality profiles as assessed by the 16PF and MAT tests. It is not at all clear how some of the trait measures derived from these tests would relate to personality needs. Similarity was found to have a slight relationship to attraction but only if similarity was assessed in terms of agreement on individual items in the test, rather than in terms of similar profiles.

Meyer and Pepper (1977) did study young married couples, and they used scales designed to assess personality needs. No evidence for complementarity emerged; couples tended to be similar and on certain needs (e.g. affiliation; aggression; autonomy and nurturance) well-adjusted couples were more similar than less well-adjusted couples.

The evidence for Winch's theory of marital choice is slim. Only Kerckhoff and Davis (1962), in a study which will be discussed later, provide any substantial support for the complementarity hypothesis and their findings could not be replicated by Levinger et al (1970). Given this lack of support in the area which the theory was designed to cover (i.e. marital selection) it is therefore not surprising that attempts to link complementarity with friendship choice have also been largely unsuccessful (e.g. Reilly et al 1960; Day 1961; Mehlman 1962; Miller et al 1966; Pierce 1970). The hypothesis that personality similarity is related to attraction has fared slightly better. Izard (1960a) found, using students as subjects, that EPPS profile similarity was related to friendship, and further that pre-acquaintance similarity was related to later friendship choice in a freshman group, though not in a group of college seniors (Izard 1960b; 1963). Pierce (1970) provides weak support for Izard's finding of a significant relationship between pre-acquaintance need similarity and later friendship choice in a freshman group. However Hoffman (1958) and Hoffman and Maier (1966) found that personality similarity did not lead to attraction in problem-solving groups.

Overall the correlational studies of personality similarity/complementarity and attraction provide stronger support for the importance of similarity over complementarity, while at the same time indicating that personality similarity is only weakly and inconsistently related to attraction. Experimental studies within the framework of the attraction paradigm provide parallel findings in this respect. Byrne et al (1967) investigated the effect of similarity on the personality dimension of repression-sensitization. Similar strangers were found to be more attractive, with subjects repending to similarity both in terms of

responses to individual questionnaire items, and overall scores on the trait dimension.

Palmer and Byrne (1970) and Seyfried and Hendrick (1973) compared the similarity and complementary hypotheses; the former study in relation to the dimension of dominance-submissiveness, the latter being concerned with the needs of nurturance and of succourance. The similarity hypothesis was partially supported by Palmer and Byrne's findings and strongly supported by those of Seyfried and Hendrick. In the former experiment there was a tendency for dominant strangers to be preferred by all subjects but especially by dominant subjects. Seyfried and Hendrick's findings provided some slight support for the complementarity hypothesis, as well as for similarity, but this was so only for male subjects.

Singh (1973) showed that personality similarity, as assessed by self-ratings on trait dimensions, was predictive of attraction, but that this effect was much weaker than the effect of attitude similarity. The latter accounted for approximately .43 of the variance in the attraction measure, while personality similarity accounted for only .02.

Very little evidence can be found then in support of the complementarity hypothesis. Given its intuitive plausibility this lack of evidence seems odd, but there are some clues provided by Kerckhoff and Davis (1962), Bermann and Miller (1967) and Wagner (1975).

The paper by Kerckhoff and Davis foreshadows recent themes in the interpersonal attraction literature in that the writers stress the developing nature of relationships and argue that the factors which influence attraction at one stage of a relationship may not be influential at another stage. Specifically they found that agreement on values was related to 'progress towards permanency' in couples who had been together

less than 18 months, but that in 'long-term' couples this relationship did not hold; rather there was a relationship between need complementarity and such progress. Levinger et al (1970) failed to replicate these findings but the notion of different 'filtering factors' operating at different stages of a relationship crops up in a number of contemporary approaches to the study of acquaintance (e.g. Murstein 1977; Duck 1973b).

Bermann and Miller (1967) and Wagner (1975) also provide some support for the complementary needs hypothesis. There are a number of features which distinguish these studies from most others in the area. Firstly, they do not rely only on psychometric tests to assess personality needs but rather make use of interviews which focus on needs expressed within the context of the particular social setting involved¹. They thus resembled the original study of Winch in this respect. Secondly, and perhaps most importantly, in both studies explicit predictions were made as to which combinations of needs would be compatible, given the requirements of the roles held by the subjects. Thus complementarity was not proposed as being necessary on all possible need combinations but only on those which provided mutual gratification within the constraints of the roles played by the individuals.

These two studies, then, indicate the importance of the social situation in which individuals interact, and in particular the role relationship between them, in determining the factors which lead to attraction. A study by Grush et al (1975) suggests that role is important in this respect in relating trait similarity-dissimilarity to attraction. It was found that students preferred teachers who were positively dissimilar to them on traits perceived as relevant to the teaching role but that there was no relation between attraction and similarity-dissimilarity on traits which were perceived to be irrelevant to the teaching role.

¹ Bermann and Miller studied a group of student nurses who both lived and worked together. This was also true of Wagner's subjects who were counsellors at summer camps.

Conceptualization of Personality, Similarity and Complementarity

Unlike attitude similarity which has a well-documented relationship to attraction, it is not at all clear how the 'fit' between two individual's personalities affects their attraction for one another. At least some of the problem lies in the conceptual confusion surrounding the term 'personality', a confusion which is reflected in the large array of measures which have been used, even in this limited area of research, to assess personality. Thus it has been pointed out already that personality can be conceptualized in terms of needs or of traits, and it is not clear how these concepts relate to each other. Further there is not universal agreement on, for example, which traits constitute personality, and it is therefore not always clear what the relationship between any two traits is. This is especially so of course when the traits are assessed using completely different measuring devices.

As Duck (1977b) has pointed out different methodologies reflect different theoretical assumptions. Thus for example Winch's use of clinical interviews is based upon a partially psychodynamic view of personality and one which is somewhat alien to the psychometric assumptions underlying the use of the EPPS. Even when trait inventories are used there are at least three ways in which similarity of personality can be assessed, and again the use of these reflects assumptions about the nature of social interaction and of person perception. Thus similarity may be assessed in terms of responses to individual items in the test; in terms of scores on individual scales of the test; or in terms of overall personality profiles. It is perhaps not surprising that the results of studies in this area are somewhat contradictory.

A solid theoretical framework could provide more consistency and Winch has provided the most influential. Although the findings of most of the studies reported above do not support his theory this may be

because of the methodology adopted as the findings of Bermann and Miller (1967) and Wagner (1975) suggest. However Winch's theory seems unlikely to be widely accepted, partly because it is based on a simplified version of a somewhat outdated personality theory (i.e. that of Murray) and therefore lies outside the mainstream of personality theory as it is today.

For present purposes the most important feature of Winch's approach is the emphasis on mutual need gratification and complementarity. This has led to similarity and complementarity being pointed as conflicting and mutually exclusive explanations of attraction. However as Rosow (1957) and Levinger (1964) point out similarity of needs may in certain instances provide the highest level of need gratification for both partners e.g. when both are high in the need for affiliation; or when both possess any need to a moderate extent.

There is a second way in which the distinction between complementarity and similarity breaks down, and this involves the necessity for awareness and acceptance of one's own needs if one is to act in accordance with them. There has to be agreement (i.e. similarity) therefore between the partners as to the relevance and importance of a particular combination of needs in their relationship. As an example of the absence of a simple dichotomy between complementarity and similarity sex-role relationships may be illustrative. Here, in order for the relationship between the man and woman to involve complementarity, there has to be a higher level agreement between them as to the behaviour expected of males and females. Thus the distinction between complementarity and similarity is not absolute as, firstly, both may have the same effect (i.e. increasing mutual need gratification) and secondly, what is complementarity at one level of analysis may well turn out to depend on similarity at another.

Winch's theory could with some modifications provide a framework within which similarity and complementarity could be conceptualised as possible providers of need gratification, but Byrne's reinforcement theory of attraction has proved most popular. Two possible reasons for this are that firstly the concept of need gratification can be viewed as a particular case of reinforcement (Seyfried 1977), and secondly that since Byrne and his colleagues have been mainly concerned with the effects of similarity, while Winch has stressed the importance of complementarity, and the 'similarity hypothesis' has been supported more frequently than the 'complementarity hypothesis', most concern has fallen on explaining the similarity-attraction relationship.

It will be remembered that attitude similarity is seen by Byrne as reinforcing because it provides consensual validation. The same process is put forward as the basis of the reinforcing effect of non-attitudinal similarity (Byrne et al 1967). This is an extension of Festinger's (1954) original presentation of social comparison theory in which he was concerned only with a supposed need to evaluate one's abilities and opinions.

Other explanations for the relationship between similarity and attraction have been put forward; only one will be discussed here, that of Ajzen (1974; 1977) who argues that similarity per se is irrelevant to attraction. He argues that attraction is 'influenced - by the extent to which the similar or dissimilar information lead to the formation of positive or negative beliefs (about the other)' (Ajzen 1977, p.69). In most experiments similarity and positive evaluations of the other are confounded since similar beliefs or personality traits tended to be evaluated positively. Ajzen (1974) performed a study in which a stranger was described by twelve traits. He found that only the positivity of the traits ascribed to the stranger significantly affected

attraction; similarity had no effect. Ajzen concluded that the effects of similarity on attraction were due to the beliefs formed on the basis of the information given about the other, and that therefore the similarity-attraction relationship had been explained. Clore (1977) countered with the point that just because the presentation of a positive or a negative description of another has a stronger effect on attraction than does information about similarity, this does not mean that any effect of the latter has been explained; rather it implies that similarity is less reinforcing than a positive description. It is certainly true that Ajzen's experiment would have been more convincing if attitude, rather than personality, similarity had been used as the stimulus.

Ajzen's information processing approach has something in common with personal construct theory, in that both stress the importance of inference and implication, and in some respects the theory of Duck can be seen as combining elements of both reinforcement theory and the information processing approach. This will be discussed in the next chapter as will the aspect of Duck's approach most relevant here, i.e. his attempt to resolve the discrepancy between the results of studies involving attitude similarity and those concerned with personality similarity. Taking his cue from Kerckhoff and Davis (1962), Duck argues that relationship development is the key to such a resolution, along with the adoption of a theoretical framework which subsumes both 'attitudes' and 'personality'. Duck's approach will, then, form the main focus of the next chapter.

CHAPTER ELEVEN

Models of Developing Acquaintance

The recent decline in the popularity of laboratory based studies of attraction in first impressions has been accompanied by the development of conceptualisations of liking as a process occurring within the context of a developing relationship. The model proposed by Duck has clear affinities, in its emphasis on the importance of time as a factor in acquaintance, with the exchange based models of Levinger and Snoek (1972; Levinger 1974); Altman and Taylor (1973) and Murstein (1971b; 1977), and these will be briefly summarised before Duck's work is discussed in more detail. No attempt will be made to compare and evaluate the various models since the present research is anchored firmly within the context of Duck's model, and in general the amount of data available is not great enough to make adequate comparisons.

The models proposed by Levinger and Snoek (1972) and Altman and Taylor (1973) are similar in that both are attempts to provide a comprehensive framework within which all interpersonal relations can be conceptualised. Levinger and Snoek argue that while factors such as attitude similarity may affect initial feelings of attraction toward another individual in real-life, as they do in the laboratory, a different approach is required in order to explain the development of relationships, the maintenance of some deep relationships and the dissolution of others. They propose that relationship development may be seen in terms of the transition from one 'level' of relationship to

another. Apart from the case of two unrelated individuals (Level 0), there are three levels of relationship:

(i) Level 1: 'Awareness' exists when one individual of a pair has formed some evaluative attitudes towards the other but no significant interaction has taken place.

(ii) Level 2: 'Surface contact' involves very restricted interaction between the two individuals, with little interdependence.

(iii) Level 3: 'Mutuality marks a continuum of states in which each partner's actions and attitudes are markedly influenced by the other's actions, views and experiences in the relationship'

(Levinger and Snoek 1972, p.5).

Such a model requires that the researcher stops searching merely for factors which influence attraction, but that concern be shifted to the factors which influence liking at a particular level of a relationship, and to identifying the conditions which facilitate the transition from one level to another. The major problem here ^{is} being the lack of an adequate measure of depth of relationship.

Altman and Taylor (1973) propose 'social penetration' as the term which best characterises the process of developing interpersonal relationships. The extent of this penetration can be characterised in terms of both breadth and depth. Most 'growing' interpersonal relationships involve both increasing breadth, as we come to know about more aspects of the other's life, and increasing depth as more 'intimate' information is exchanged. Relationships will differ however in terms of the correlation between breadth and depth of penetration e.g. the 'whirlwind romance' in which great depth of penetration may be achieved very quickly without such intimacy being very general.

Thus Altman and Taylor differ from Levinger and Snoek in that, firstly, they posit a continuum of depth of social penetration, rather than the discrete levels suggested by the latter, and, secondly, they stress the importance of breadth as well as depth of relationship. In order to measure the extent of social penetration Altman and Taylor have usually used breadth and depth of self-disclosure. By their own admission such a measure is inadequate unless used in conjunction with other measures, and, in any case, it is doubtful whether a linear relationship exists between measures of self-disclosure and of interpersonal attraction (Cozby 1973).

Both of the models discussed above are comprehensive and ambitious in scope; both attempt to provide a single conceptual framework within which very different interpersonal relationships (e.g. husband-wife; mother-son, best friends, etc.) may be integrated. Murstein (1971b; 1977) has proposed a developmental model which is much more limited in scope, being concerned, in the first instance, with marital choice. He suggests that successful courtship usually involves the negotiation of three stages. In the first, 'stimulus' stage attraction is based on cues which are available prior to any interaction taking place e.g. physical appearance. Once interaction takes place additional cues are available, and 'stimulus' cues may become less important as one or both of the pair enter the 'value' stage, in which agreement on general values comes to be particularly important in determining whether or not the relationship will continue. Finally, at the highest stage of intimacy it becomes necessary for the couple to work out compatible 'role' relationships.

Thus Murstein's model employs the idea of 'filters' first introduced by Kerckhoff and Davis (1962). Although directed primarily at explaining marital choice Murstein has suggested that his model could

also be applied to other relationships such as friendship, and in fact, his approach is in some ways similar to that of Duck's, discussed below.

Duck's 'Predictive Filter' Model of Interpersonal Relationships

Duck's (e.g. 1973b; 1977a) approach to friendship formation and interpersonal relations has provided, along with Personal Construct Theory, the major impetus for the present research. It will therefore be dealt with in detail.

Like Altman and Taylor, Levinger and Snoek, and Murstein, Duck has, throughout his writings, emphasised that interpersonal attraction of any kind (e.g. love; friendship) can only be adequately understood within a framework which concentrates on the processes involved in the development of social relationships. Ideally, one framework should be able to deal, not only with successful relationships, but also with those which end in indifference, or even hate. Further, Duck argues, emphasising the importance of time as a factor influencing interpersonal relationships may aid in the resolution of certain issues in the interpersonal attraction literature; the major issue in this respect being the discrepant findings of studies relating attitude similarity to friendship and those relating personality similarity to friendship.

Duck (1973b) argues that the progression from mere acquaintance to established friendship can be seen in terms of the operation of filters by which means 'individuals select from the total population those who can be considered potential friends and ... by continual reduction a low number of people whom they regard as close friends' (Duck 1973b, p.39). As a relationship develops different cues are emphasised, in the selection process, as they become available. Thus normally for example, information about another's physical appearance is available before anything is known about his attitudes; and information about another's

attitudes is usually available before much is known of his personality. These three 'factors' thus play a part as filters at different 'stages' of the acquaintance process i.e. while physical appearance may determine initial attraction it does not account for established friendships; similarly such friendships are not sustained by attitude similarity, despite its relation to attraction towards strangers, but rather depend on the discovery of similarity of personality. The discrepancy between the findings of studies of the effects of attitude-similarity and of personality-similarity can thus be resolved in terms of the 'stage' of acquaintance usually tapped in interpersonal attraction research (i.e. that of 'first impressions') for attitude 'similarity merely lays the ground and ... later disclosures of information reveal how such attitudes are woven into the web of an overall personality outlook'. (Duck 1973b p.49).¹

The first version of this model, presented in the early chapters of Duck (1973b), was rather mechanistic (Duck 1977d) in that it involved a view of the acquaintance process as a relatively automatic passage through a sequence of stages. Each stage had associated with it a particular criterion against which others were assessed and either 'filtered out' or allowed through into the next stage of slightly greater intimacy. Although a precise identification and ordering of the various filters could not be made, it was assumed that these were relatively invariant. In general it was proposed that mere acquaintance involved a concern with easily obtainable, fairly superficial information about the other, while gradually increased intimacy involved a concern with deeper, more 'personal' aspects of the other person.

¹ This quote indicates that Duck does not conceive of personality in traditional trait terms; rather he emphasises the individual's 'outlook'. The influence of Kelly's theory is perhaps obvious here, and Duck's conception of personality will be returned to when his use of Personal Construct Theory is considered.

The motive force underlying this process was taken to be that proposed by Byrne who, following Festinger, had argued that people have a need for consensual validation, and that, when obtained, such validation is rewarding. Others are liked therefore to the extent that they provide validation for the individual's 'outlook'; the deeper the level at which such validation is provided, then the deeper the level of the resulting friendship.

This idea that validation of 'personality' is central to the establishment and continuation of friendship has remained the basic pivot around which later versions of the model have revolved. Later versions have however been less mechanistic, and have allocated an active rather than a passive role to the individuals involved (Duck 1977a, b, c, d; 1978; 1979). Rather than the passive reaction to different cues as they become available in the process of acquaintance, the theory now emphasises that individuals are involved in an active search for consensual validation at the deepest possible levels of personality. This search is carried out through the erection, change and re-erection of models of the partners probable 'personality' structure and content, with consequent comparison of that model against the individual's model of his own personality' (Duck 1978,p.5). This information about the other is now seen to have, not only 'direct' effects in terms of evaluation against the appropriate filter, but also 'indirect' effects in that inferences about deeper levels of the other's personality are drawn from the information available, and it is on the basis of such inferences that the other is initially assessed against those filters which, coming later in the sequence, serve as the criteria for the acceptance of the other as an intimate friend. Such filtering is only preliminary, however, since the model of the other's personality constructed by the individual will be modified as further information is obtained (Duck 1976).

In this more 'constructive' model it remains the case that the sequence of filters is viewed as relatively stable (Duck 1977b), and it therefore follows that the research reported here, though mostly based on earlier statements of the theory, remains relevant to these later versions. Before going on to look in more detail at Duck's approach as it is derived from, and related to, Personal Construct Theory, a number of his studies which have dealt with initial attraction will be described.

Attraction Experiments in the Context of Duck's model

Duck has been concerned to link his approach with that of Byrne and his associates, and believes that experimental studies can be usefully regarded in filtering terms. He suggests (e.g. Duck 1977b) that, since the sequence of filters tends to remain constant in interactions, what is happening in laboratory studies of attraction towards a stranger is that the information presented to the subject is such that it allows those filters which normally operate early in an interaction to be 'side-stepped' or ignored. Thus, for example, in a typical experiment attitudinal information about the other is provided directly and without being presented in the context of other information, such as physical appearance, non-verbal cues, tone of voice etc., which would normally be available in real-life interaction. Such a methodology, Duck suggests, has led to a somewhat misleading emphasis on attitude similarity as a determinant of attraction and friendship (e.g. Duck 1975a).

Duck and Craig (1975) argue that, in initial impressions, people not only use 'external' information as a basis of 'filtration', but that even when 'psychological'

information about others is available, it will have a less powerful effect on attraction responses than will 'external' information , at this stage of acquaintance. They tested out this basic idea in two experiments. In the first experiment subjects evaluated two bogus strangers, each being described by a list of 11 adjectives. While one stranger was described in 'external' terms (e.g. young; athletic, long-haired) the other was described in 'psychological' terms (e.g. clever, cool-headed, confident). Although the two lists were matched for mean evaluation score (Anderson 1968) subjects rated the stranger described in 'external' terms as significantly more attractive than the stranger described in 'psychological' terms. Duck and Criag claim that this finding 'suggests that external information has a primary significance to Ss at this stage of acquaintance, which overrides the impact of psychological information' (p.160). More convincing support is provided by the results of the second experiment in which similarity of self-description was the independent variable. Attraction ratings in this study were significantly affected by both similarity in terms of 'external' characteristics and similarity in terms of 'psychological' characteristics. However the effect of the former type of similarity was three times as great as the effect of the latter.

Thus the study does provide evidence that 'external' information about another is more important in determining attraction than is 'psychological' information - the inference being that the latter only becomes of primary importance once filtering in terms of external characteristics has taken place. An experiment which compared similarity of attitudes with 'external' similarity would have been useful as a more powerful test of the argument. Duck and Craig (1977) did compare the effects of attitude similarity on attraction with those

of agreement as to the characteristics of a stimulus person. Attitude similarity was found to be intermediate in its effects between the less powerful effect of agreement as to the 'external' characteristics of the stimulus figure, and the more powerful effect of agreement on evaluation of the other in 'interpersonal' terms. The most convincing explanation for the somewhat different findings of the two papers involves the distinction between similarity and agreement. While subjects in the 1975 paper knew their degree of similarity to the stranger, in terms of either 'external' or 'psychological' characteristics, they could only infer the existence of agreement or disagreement. Subjects in the 1977 experiment however had direct access to the other's judgements of someone whom they themselves had judged i.e. they knew whether or not the other agreed with them, and it is agreement rather than mere similarity which is the basis of consensual validation.

In these experiments Duck is attempting to provide a valuable link between attraction paradigm studies and studies of real-life acquainting by the a priori ordering of the 'reinforcement' values of different types of stimulus information in terms of their order in the sequence of 'filters' and the extent to which they provide validation for the 'deep structure' of personality. However there remains the problem that an exact sequence of filters cannot be specified. Further, despite the possibility of a vast 'explosion' of studies along these lines, it would seem more appropriate for a theory of developing acquaintance to concern itself with just that; and in fact most of Duck's work has been concerned with real-life friendship. It is in this context that the sequence of filters will be discovered, if at all.

The next section then will introduce Duck's studies of real-life friendship by discussing their theoretical basis in Personal Construct Theory.

Friendship and Personal Construct Similarity

Duck's first major theoretical linkage of Personal Construct Theory and interpersonal attraction was contained in his book 'Personal Relationships and Personal Constructs' (Duck 1973b) and although recent papers (Duck 1977a; 1979) have modified and extended the earlier argument in some ways, it is the 1973 book and its associated empirical studies which will form the basis of discussion here.

The summary of Duck's theory presented above indicated that the acquaintance process is conceived as involving the reduction of a large number of potential friends to a small number of close friends through the operation of 'filters'. The filters are used in a set sequence moving from those based on relatively 'impersonal' cues such as physical characteristics to those involving selection on the basis of more 'personal' information. Ultimately close friendships are based on the existence of personality similarity. Although Duck has since come to use the term 'personality' in a very general sense (Duck 1977b), in his earlier work personality was viewed in terms of personal constructs.

Duck (1973b) argues that the hypothesis that similarity of personal constructs is related to friendship can be derived from Kelly's theory by conjoining the commonality and sociality corollaries.¹ Taken together these corollaries, Duck argues, imply 'that the more one finds particular similarities with another particular person, the greater will be the understanding of his processes (because they are similar to one's own) and therefore the greater the ability to communicate in a

¹ Commonality corollary: to the extent that one person employs a construction of experience which is similar to that employed by another, his psychological processes are similar to those of the other person. Sociality corollary: to the extent that one person construes the construction processes of another, he may play a role in a social process involving the other person.

comprehensible world ... friendship follows from similarity of construing processes because it eases communication'. (Duck 1973b p.25).

Thus far the argument only slightly modifies Kelly's original position (he emphasised that commonality could exist between two people without either of them being aware of it, and that one could play a successful role in relation to another despite having widely different constructions), and is very similar to those put forward by, for example, Landfield (1971), Runkel (1956) and Triandis (1959) to the effect that similarity aids communication. Duck goes further though in arguing that personal construct similarity has a functional significance for the individuals involved, for it provides consensual validation for the usefulness of the constructs themselves i.e. 'similarity ... provides a measure of social reality, cements his subjective interpretations and categorizations of that which is outside and reinforces his subjective structuring of experience' (Duck 1973b p.26). Others who look at the world in the same way as we do are therefore likely to become our friends because they provide consensual validation for our own view, and such validation is reinforcing.

The idea that an important way in which people evaluate their 'outlooks' is by comparing their constructs with those of other people can be derived from Personal Construct Theory, and the functional significance (or 'reinforcement value') this has can be viewed in terms of the validation of superordinate constructions of the sort: 'I ... have a grasp of reality; an understanding of social life; am not too unlike other people' etc. Given this, and the theoretical assumption that there are implicative links between constructions of liking and of such validation, there seems little need to bring in a concept of reinforcement which implies a totally different 'image of man' (Shotter 1975) from that contained within Kelly's theory. In adopting such a view Duck is linking

his approach with that of Byrne and, in contrast to those who view Personal Construct Theory as a basis for a total Psychology (e.g. Bannister and Fransella 1971; Fransella 1978), is, like Mischel (1973), seemingly viewing explanations in terms of personal constructs as incomplete. However in more recent writings (Duck 1979) a more thoroughgoing Kellian approach has been adopted - one which while stressing that an understanding of interpersonal relationships requires more than Personal Construct Theory alone can offer does not rest on the importation of such 'foreign' explanatory concepts as reinforcement.

The idea (Duck 1977a) that validation of deep levels of the personality may be achieved through the existence of dissimilarity rather than similarity will be considered in a later section since this has not been tested in the empirical studies to be described now.

Basic Empirical Studies

The first necessary step following from a theory which posits consensual validation of 'deep structure' personality, viewed in terms of personal constructs, as the basis of close friendship is to demonstrate that friends do in fact have similar personality 'outlooks' i.e. similar personal constructs. This requires that a measure of similarity be devised. Two major alternatives present themselves; the first would involve assessing similarity of personal construct content using only the verbal labels of the constructs as data (c.f. Landfield 1971); the second alternative would involve assessing similarity in terms of some measure of personal construct organisation e.g. cognitive complexity (c.f. Bender 1968). Duck's choice was to emphasise the importance of content on the grounds 'that it is surface content rather than underlying structure which is available, in the normal course of events, to individuals in

everyday life' (Duck 1973b, p.57).

The criterion of construct content similarity which Duck adopted is rather a strict one. Unlike Landfield (1971) who defines similarity in terms of the usage of certain categories of constructs, Duck assesses the similarity of the meanings of individual constructs. As an example suppose we have two subjects who each produce twelve constructs on a Repertory Test. If either subject has exactly repeated a construct then all 'surplus' entries of this construct are erased from his list so that only one entry remains. Then every construct of the first subject is compared with every construct of the second subject, and a decision made in each case as to whether the two constructs have the same meaning. The total similarity score between the two subjects is the number of constructs they have in common.

Using this measure Duck (1973b experiment 'A') compared the powers of construct similarity in differentiating between friendship pairs and non-friendship ('nominal') pairs, with those of value similarity as assessed by the Allport-Vernon Scale of Values. Since the filtering model proposes that 'personality' similarity will be important in friendship formation in later rather than earlier stages of acquaintance, a group containing pairs of established friends was required in order to provide an adequate test of the hypothesis. A group of final year students was chosen for this purpose.

Each of the 26 subjects completed the Allport-Vernon Scale and a group form of the Repertory Test (Reptest) which required them to generate 18 constructs. The sociometric data were collected at the end of the session; subjects being asked to list their 'friends in this class'.

The analysis of the data involved a sequence of steps which was followed, with some slight modifications, in all the studies summarised below. The sociometric data was analysed so as to classify the relationship between every pair of subjects as one of two types. If both subjects had named each other as a friend then they were classified as a 'friendship' pair; all other pairs, including cases of unreciprocated choice, were classified as 'nominal' pairs. Pairs in which unreciprocated choices were made were not thought to be classifiable as examples of established friendship.

The relationship of value similarity to friendship was assessed in the following way. Each of the 6 value dimensions of the Allport-Vernon Scale was scored individually for each subject, and the absolute difference between two subjects scores on a dimension was taken as the index of their similarity on that value. Each subject was compared with every other subject in this way, and two scores derived for each subject. The first was the mean similarity score between himself and those others with whom he formed a 'friendship' pair: the second was the mean similarity score for the 'nominal' pairs of which he was a member. Once these scores had been derived for each subject, friendship pairs and nominal pairs could be compared, in terms of similarity, using a correlated t-test. If friends were more similar then the mean difference score for such pairs would be less than the corresponding mean for nominal pairs. However no significant differences were obtained on any of the 6 value dimensions.

The relationship of construct similarity to friendship was assessed in essentially the same way. The constructs produced by every subject were compared with those of every other subject as described above and a similarity score derived for every pair of subjects. These scores were then categorised as originating either from friendship pairs or from

nominal pairs, and means for these two categories assessed. This time the t-test was significant ($p < .001$) indicating that friends did have more similar personal constructs than non-friends. Further the ability of the measure of construct similarity to differentiate between friendship pairs and nominal pairs was significantly ($p < .005$) greater than the power of the Allport-Vernon Scale to do so.

This study then was in accordance with prediction for it showed that personal construct similarity was related to established friendship and that value similarity was not, as would be expected on the basis of the filter model which has attitude-value similarity operating as a filter at an earlier stage of acquaintance than construct similarity. Duck (1973b experiment B) went on to argue that although personality similarity was seen as the most important factor influencing later friendship choices, this did not mean that filtering ceased once the stage of personality filtering had been reached. Rather he argues 'concern about general personality characteristics may precede and then cede to concern over specificities and minute detail ... such a view would yield the prediction that, in established friendships, tests which assess personality in global terms ... may be less powerful than that which taps personal constructs (Duck 1973b, p.63). This prediction was tested in a study which used as subjects 40 trainee teachers who had lived in the same hall of residence for at least a year. As well as making sociometric choices and completing a Reptest each subject also completed the California Psychological Inventory (CPI) which provides scores on 18 trait dimensions. The results showed that while personal construct similarity was again significantly ($p < .05$) related to friendship choice, this was true of only one CPI dimension (that of Self-Acceptance). When the two tests were compared as to their power to discriminate friendship pairs from nominal pairs the Reptest was found to be superior ($p < .01$).

Duck (1973c) provided a more powerful test of the hypothesis in that this study compared attraction, after brief interaction, with established friendship. Two subsets of female subjects were used: one consisting of unacquainted students, the other of students who had lived in the same hall of residence for at least a year. The acquainted group completed the CPI, a Reptest and listed their 'frinds in this city'. The unacquainted group were, having already completed the two tests, split into discussion groups of seven subjects each. These groups were given a number of topics to discuss and told to reach a unanimous decision on each, thereby ensuring at least some participation by all members. They then had to list the members of their group to whom they felt attracted.

The analysis of the data involved basically the same procedures as had previous studies. One overall measure of similarity was derived from the CPI, and the usual measure of construct similarity assessed for the acquainted group. A stricter measure of construct similarity was, however, used for the unacquainted subjects. This 'literal' measure involved the classification of constructs as similar only if the same or very similar words had been used, unlike the wider 'conceptual' criterion which classified constructs as similar according to their meaning. The rationale for the use of the 'literal' criterion in this case is provided in the findings of Duck and Spencer (1972), to be discussed below, that literal similarity is more appropriate than conceptual similarity in the case of incipient friendships.

The results were fairly clear-cut in support of the hypothesis. The CPI measure of similarity successfully discriminated ($p < .01$) between friendship pairs and nominal pairs in the unacquainted groups (i.e. after brief interaction) but not in the previously acquainted group. The Reptest, on the other hand, did discriminate friendship pairs from

nominal pairs ($p < .05$) in the previously acquainted subset, but did not do so significantly in the previously unacquainted subset.

Taken together these three studies provide good evidence for the hypothesis that friends will have similar personal constructs, and that such similarity will be manifest in established friendships rather than during early acquaintance. Grosser measures of similarity such as those derived from the Allport-Vernon and the CPI were not related to established friendship but may be related to attraction at earlier stages of acquaintance. Two issues now present themselves: firstly given that friends do share some of their personal constructs to what extent are they aware of this? Secondly the filter model is one of developing acquaintance and thus requires longitudinal testing; this is particularly important since the prediction is that construct similarity plays a part in determining friendship, rather than vice-versa. The first of these questions has been tackled by Duck (1973a; 1973b experiment C); the second by Duck and Spencer (1972; Duck 1973b experiment E) and more recently by Duck and Craig (1978).

The data for Duck (1973a) was collected along with that already reported on above as Duck (1973b experiment B). After each subject had completed the Reptest and produced a list of their friends they were asked to consider each of their constructs in turn and note down the names of any of their acquaintances who they thought would use the same 'way of categorising people'. Subjects could if they wished write 'Everyone' if they considered the construct to be universal, or 'No one' if they thought it was peculiar to themselves. As reported in Duck (1973b) the results show that subjects were accurate in just under two thirds of the judgements of their friends similarity whether or not the true position was similar (64.76% accuracy) or not similar (64.64% accuracy).

Where errors were made then they were mostly (93.57%) of the kind where similarity was claimed but found not to exist. This last finding does not necessarily offer the support for the consensual validation argument which Duck suggests.

'For when not being accurate, subjects tended to over-estimate the similarity which existed between them and their friends and this implies that similarity is surrounded with a subjective importance, irrespective of any incidental interest which it may have'.

Duck 1973b p.71.

This conclusion is not entirely justified for two reasons. Firstly it may be that subjects were being perfectly accurate in claiming similarity; it being the case that the Reptest is not a perfect assessment device and may leave some constructs unturned i.e. the friend does have a similar construct but it has not been tapped by the test. Secondly the number of similarities in such studies is much lower than the number of non-similarities, which means that the probability of an error when claiming similarity is much greater than the probability of an error when not claiming any similarity. Thus this study does not provide such strong evidence for the subjective importance of similarity as Duck claims, but despite this, it would be extremely surprising if such 'autistic' perception did not occur given the findings of many other studies which indicate higher perceived similarity in friends than actual similarity (e.g. Newcomb 1961). The study does indicate that the subjects were aware of the similarity that existed between themselves and their friends, and therefore complements the earlier studies which related construct similarity and friendship.

Longitudinal Studies

Vital for the filter model is that similarity of personal constructs should be related to friendship only after the period of initial acquaintance is over and after other less 'personal' cues have been utilized in the filtering process. Duck (1973c), using a cross-sectional design, did present evidence for the hypothesised sequence of filters, but in order to test the proposal that construct similarity precedes the establishment of friendship, a longitudinal design must be employed. This was first done by Duck and Spencer (1972; Duck 1973b experiment E). The subjects in this study were first year female geography students, all living in the same hall of residence. Each of the 16 subjects completed two Reptests; the first during their first week at the university, and the second almost six months later when they also provided a list of their friends (choices were not restricted to the group under study).

The main interest of the study lies in the question as to whether personal construct similarity in the very early stages of acquaintance can predict later friendship. When construct similarity was assessed according to the usual 'conceptual' criterion then friendship choices at 6 months acquaintance were not significantly related to similarity on either the first or the second Reptest.¹ As has already been mentioned however, a new 'literal' criterion was introduced in this study. The rationale for this is stated by Duck (1973b) as being 'that when construct similarity begins to operate as a filter the first concern would be with literal similarity since this is the more obvious and easy to discover'. (p.78)

¹ It should be noted that friendship pairs in this study consisted of both reciprocated and unreciprocated choices. This change is reported in Duck and Spencer (1972) but not in Duck (1973b).

i.e. since it is easier to detect whether another individual is using the same words as oneself than it is to discover whether he means the same, then literal similarity is hypothesised as acting as a filter in earlier acquaintance than is the case for conceptual similarity; the former being used as an inferential cue for the latter.

When this stricter similarity criterion was used then a significant result emerged. Similarity on the first Reptest predicted later friendship choice. This study therefore provides the first evidence for the proposal that similarity of personal constructs precedes friendship formation. A problem remains however which is that using either criterion of similarity, friendship choice at 6 months is not found to be significantly related to similarity after 6 months. Duck's solution to this problem is to argue the case for a further analysis of the data which concerns itself only with those constructs which may be classified as 'psychological' i.e. 'those describing a character, personality or cognitive attribute of an individual' (Duck 1973b, p.84). Such constructs being differentiated from 'role' constructs which 'describe habitual activities or roles' e.g. male-female. The basis of this argument is parallel to that which led to the introduction of the literal criterion of similarity, and relies on both the greater difficulty of spotting 'psychological' similarity and the greater 'personalness' of such constructs which are therefore in greater need of consensual validation than are the less personal 'role' constructs. Similarity of 'psychological' constructs then will only play a part in friendship choice once suitable individuals have been selected for comparison on the basis of other, less personal criteria. The implications of this argument for the study under discussion were that while similarity of 'psychological' construing on the second Reptest should be significantly related to friendship, this should not be true of such similarity on the first Reptest.

In order to test this hypothesis the subjects' constructs were first classified as being either psychological or role constructs with a third 'other' category being used for those constructs which could not be reliably assigned to the two major categories. When psychological constructs were then taken out and analysed separately it was found that similarity of psychological construing on the second Reptest was significantly related to friendship choice when both the literal ($p < .05$) and the conceptual criteria ($p < .02$) were used. Friendship choice was not significantly related to similarity of such construing on the first Reptest. Thus the results of this study suggest that a concern with literal similarity on all constructs in early acquaintance is gradually replaced by a concern with similarity of psychological construing at later stages of acquaintance i.e. the filtering hypothesis is supported here in terms of the type of personal construct similarity that seems important in early and later stages of acquaintance.

A more recent study of the sequence of filters is that of Duck and Craig (1978) who, rather than comparing different kinds of construct, set out to compare longitudinally the relationships of personality trait similarity, attitude-value similarity and personal construct similarity to friendship choice. Arguing that 'newly acquainted friends are more likely to be similar in terms of the relatively accessible but superficial personality information whereas long-term friends are more likely to be similar in terms of less accessible, but more fundamental, personality information.' (p.238), the authors predicted that personal construct similarity would distinguish friendship pairs from others only after filtering in terms of values (as measured by the Allport-Vernon Scale) had taken place, and value similarity would only so distinguish once very basic filtering had taken place. In this study the base level of personality information was taken to be that of traits which it was argued

are relatively easily accessible. The test used was again the California Psychological Inventory (CPI).

First year undergraduate students from the same campus residence acted as subjects. Unacquainted at the beginning of the year it was supposed that they would have formed established friendships after 8 months at the University (T_3). It was predicted that earlier construct similarity would predict friendship choices made at this stage. Value similarity, on the other hand, was expected to predict such choices at about 3 months of acquaintance (T_2). In an earlier study (Duck 1973c) similarity on CPI dimensions had been found to be related to attraction after interaction of only 40 minutes. Since it was decided that, in a naturalistic study, one month provided a reasonable period for the subjects to get acquainted and that this would be the time for the first testing session, the authors predicted that at this time none of the three tests would correlate with sociometric choices; the time for filtering in terms of traits having passed and those for value and construct filtering not yet having been reached.

Data was collected then at three points: T_1 one month after starting at the University, when the three tests were completed and initial sociometric choices made; T_2 after three months and T_3 after eight months. Only sociometric data were collected on these last two occasions. Similarity on the CPI and the Allport-Vernon was assessed in terms of difference scores on the separate dimensions of the tests, while construct similarity was assessed seemingly according to the conceptual criteria, and in terms of four categories of construct: Psychological; Role; Physical (e.g. 'Tall-Short') and Fact ('those concerned with the objective fact but not with physical characteristics: e.g. Married-Unmarried').

The results of the study were fairly clear-cut. At T_1 none of the measures of similarity differentiated friendship pairs from nominal pairs. At T_2 there was a significant interaction involving value similarity which indicated that friends were more similar to each other than nominal pairs on all except the Religious Scale; this latter finding seemed to be due to a small subset of subjects who deviated from the rest of the group by having a high score on this particular value. When the Religious value was dropped from the analysis then there was a significant main effect of value similarity at T_2 but not at T_1 or T_3 . At T_3 the only significant finding was that similarity of personal constructs differentiated between friendship and nominal pairs. Further analysis revealed that when types of construct were taken separately then significant effects were obtained for psychological and role constructs, but not for physical or factual constructs. The results thus provide good support for the filtering hypothesis especially in terms of the shift in relative importance of value similarity and construct similarity between three months and eight months acquaintance. The finding that personal construct similarity precedes friendship choice adds support to the findings of Duck and Spencer (1972) though the failure to make use of the literal criterion in the later study raises questions about its importance.

Sex and Age Differences

Duck (1973a) reports the existence of sex differences in the relationship between construct similarity and friendship choice, with the effect being stronger for female subjects than for males. While females chose both males and females who were significantly ($p < .002$) more similar to themselves than the other males and females in the group,

males chose similar males ($p < .05$) but their choice of female friends did not seem to be determined by their level of construct similarity. Duck suggests that one possible reason for the latter finding might be 'the age (about 20) and accompanying orientation of the subjects'. In other studies Duck has concentrated on single-sex groups or, presumably because no significant sex differences have emerged, has not analysed the data separately for each sex (e.g. Duck 1973b experiment A; Duck and Craig 1978 both involved mixed-sex groups but no separate analyses are presented).

Duck (1975b), in a study of adolescent friendship choices, did discover differences between the sexes. However the main focus of this study was the developmental changes in the type of construct similarity between friends. The rationale for this focus lies in the age-related changes in personal constructs reported by Little (1968) and Brierley (1967, reported in Bannister and Fransella 1971). Little (1968) classified constructs as being either 'Psychological', 'Physicalistic' or 'Role' and showed that while eleven year olds tend to concentrate on Physicalistic attributes of others, psychological constructs are used increasingly by mid-adolescents. Brierley (1967) also found more 'personality constructs' being used by older children. In both of these studies there were sex differences in that girls tended to make more use of psychological terms than did boys. Given these developmental changes and sex differences it was hypothesised that personal construct similarity would be related to friendship choices by adolescents, but that the type of similarity involved would change as the children got older, and in particular there would be a move towards similarity of psychological rather than factual construing, particularly among females.

Three groups of subjects were involved; each representing a different age group. The mean age of the three groups being (roughly) 12 years, 14 years and $15\frac{1}{2}$ years. Each group contained both male and female subjects. The subjects were given a Reptest and required to produce 15 constructs. Finally they were asked for a list of their 'friends in this class'. The sociometric data showed that no reciprocated cross-sex choices were made and therefore the analyses to be described all involve same-sex friendships only.

Firstly all constructs were classified as similar or not similar using the conceptual criteria, and friendship pairs compared with nominal pairs in the usual way. Since the data for each sex were analysed separately there were two such comparisons for each age group making six in all. All six were significant (at least $p < .02$) indicating that friendship pairs were more similar than nominal pairs. In order to ascertain whether the type of construct similarity involved differed for the three age groups, a construct category system was required. The system adopted made use of five mutually exclusive categories: Psychological; Role; Interaction (concerned with 'behaviour in face-to-face ongoing social interaction' e.g. shouts a lot - soft voice'); Fact (concerned with characteristics which are 'objectively assessable but not solely related to physical appearance'); and Physicalistic. All constructs were assigned to one of these categories and construct similarities within each category were worked out for friendship pairs and nominal pairs as before. In terms of the percentages of the different categories of constructs used by the different age groups, the most noticeable differences were the much greater use of Factual constructs, and lower use of psychological constructs, by the 12

year olds compared to the other two groups. The types of construct similarity related to friendship differed between the groups and the sexes. In the younger group similarity of factual constructs significantly differentiated friendship pairs from nominal pairs in both sexes; similarity of physicalistic constructs was significantly related to friendship choices only for girls. Neither of these categories provided significant differences in the 14 year old group where the emphasis shifted to interaction constructs for the boys, and psychological constructs for the girls (though the same comparison for the boys was only just short of significance). The 15½ year old girls also significantly differentiated between their friends and others in terms of psychological constructs. Both sexes in this age group significantly differentiated in terms of physicalistic constructs.

Thus this study indicates that not only is adolescence a time of changing constructions, but also that the type of construct similarity which forms the basis of friendship also changes. Further this changing emphasis on the types of constructs shared with friends does not merely reflect the relative usage of the construct categories at any particular time. Again sex differences were found but this time they lie in the type of construct similarity which is emphasised rather than in the effects of overall construct similarity. Taken together the two studies described above lend weight to the view that the filters involved in the acquaintance process will not be the same for all individuals, but may vary according to the implications a particular sort of information about another has for the individuals own personal constructs and their validity.

Summary and Discussion

As presented in Duck (1973b) the filtering model of friendship formation and development proposes that acquaintance involves the progressive filtering off of other individuals as not being suitable friends. This filtering off takes place on the basis of different kinds of information as it becomes available at different stages of acquaintance. The sequence of filters is presumed to be relatively invariant and to involve a progression from relatively accessible, fairly superficial cues such as physical appearance to 'deep structure' personality conceived in terms of personal constructs. Only the small number of individuals who provide consensual validation, through their similarity, for a person's personal constructs will become his close friends. Such consensual validation is seen as rewarding and as providing confirmation for the individual's outlook, his view of the world. The major change introduced into later versions of the model (e.g. Duck 1977a) is the emphasis laid on the individual's active search for consensual validation which means that friendship development is seen as

'comprising three basic processes: (i) the systematic gathering of information about a partner's personality; (ii) the construction, modification and reconstruction of a model of the partner's likely personality; (iii) the assessment of degree of support for one's own personality (usually, but not exclusively, in terms of similarity between one's own personality and that of the partner).'

(Duck and Craig 1978, p.238).

In this later model the idea of a sequence of filters remains and thus the basis of the work to be reported here is unaltered. Greater consideration will be given to more recent statements by Duck in later chapters.

Duck had a number of aims in developing his model; firstly to present a model of developing acquaintance, one which was not restricted to the study of first impressions; secondly, in presenting such a model to enable the breakdown of relationships to be studied under the same theoretical umbrella (see Duck and Allison 1978 for the first empirical study of relationship breakdown); thirdly to reconcile the conflicting findings of studies of attitude similarity and personality similarity in relation to attraction, by suggesting that each is important at a different stage of acquaintance; fourthly to investigate the usefulness of Personal Construct Theory as a theory of social behaviour, and thereby to link different 'areas' of social psychology; and fifthly, to link his model with experimental studies of first impressions by suggesting that information about another will lead to attraction to the extent that it provides evidence of deeper personality structure (e.g. Duck and Craig 1977), and is available at the appropriate stage of acquaintance (e.g. McCarthy and Duck 1976).

Discussion here will be limited in that specific methodological points will be made mostly in relation to the empirical studies presented in later chapters. The points that will be discussed here include the use of length of acquaintance as an index of development of relationship; the sequence of filters; the resolution of the attitude similarity versus personality similarity issue; the emphasis on personal construct content, and the possibility that dissimilarity may be liked in some circumstances.

Assessing Relationship Development

Time is obviously an important factor to be taken into account by any model of developing acquaintance, but equally obviously the length of time that two people have known each other does not give a perfect

indication of the progress which their relationship has made even if they are ideally suited to each other. All kinds of other factors may intervene to slow down or speed up their rate of progress in getting to know each other. Although length of acquaintance does in many cases provide an adequate, albeit approximate, guide to the progress made it does not allow for fine discrimination of the stages involved in the acquaintance process. The lack of this kind of assessment capability is bound to restrict the future development of the filter model. Questionnaires of the sort proposed by Rubin (1970) may prove useful but from the present perspective such 'objective' measures may obscure vital information about the partners' own views as to the depth their relationship has reached. An extremely simple attempt to differentiate two layers of perceived relationship depth is made in some of the studies to be reported in this thesis.

The Sequence of Filters

Parallel to the problems of assessing the stage reached in the acquaintance process in terms of Time, are those to do with specifying the order of the filters involved. In general it is assumed that high correlations exist between the relative availability of information about another, its 'personalness' and the degree to which the information provides validation or invalidation for one's own view of the world. Thus it is assumed that early filtering takes place in terms of easily accessible less personal cues and gradually, as acquaintance progresses, filtering involves the rejection of others as potential friends on the basis of more personal and less accessible information about them. Thus Duck (1973b,c; Duck and Craig 1978) has shown that personal construct similarity plays a role in friendship choice at a later stage than do value similarity or personality trait similarity, while Duck and Spencer

(1972) have presented evidence for the view that progressive filtering continues once the stage of filtering in terms of constructs is reached, with emphasis shifting from overall literal similarity to conceptual similarity of psychological construing.

In experiments not yet discussed Duck (1973b) provides further evidence for the existence of this shift in emphasis on different types of construct. In two of these (experiments F and G) he showed that the relative proportions of Psychological, Role or Interaction constructs produced by subjects depended on the elements in the Reptest. Thus when well-known but distant public figures were being construed then 50% of the constructs produced were judged as belonging to the Role category. When discussion groups of students unknown to each other were created and Repests with the members of the groups as elements, were given to the subjects then there was a relatively high (37%) use of Interaction constructs and a relatively low (20%) use of Psychological constructs. When groups were formed of subjects who had had some contact with each other before, and who were faced with a less 'task-orientated' situation then the number of Psychological constructs was much higher (54%), and in general the proportions of the various types of construct were more similar to the proportions obtained when the usual element list of well-known others was employed.¹

These findings thus add support to the view that once a certain stage of acquaintance has been reached then emphasis is placed upon the construal of the other's personality while at earlier stages others are construed mainly in terms of their interaction styles and the roles they fit. Duck went on to show that, as would be expected from Personal Construct Theory, the early construal of others in non-psychological terms

¹ 63% Psychological; 24% Role; 6% Interaction; 6% Other.

did not mean that no psychological implications were drawn. After completing the Reptest which had such public figures as Malcolm Muggeridge as elements, subjects were instructed to indicate what other characteristics tended to be possessed by those individuals described by the positive poles of the elicited constructs. When these implications were categorised then the proportion of Role constructs dropped (50% to 27%) while that of Psychological constructs rose (38% to 57%).

Thus while 'direct' construal of another's deeper personality characteristics tends to be attempted only after some time, hypotheses can be made about those characteristics on the basis of early fairly superficial construing. These hypotheses presumably to be tested out once more information is available.

While such results do lend support to Duck's model problems arise when more than a very gross ordering of cues and filters is attempted. The sequence of filters proposed by Duck which goes (something like) physical appearance, interaction style, values, personal constructs is based largely on intuitive grounds. Any more specific predictions about finer details of this progression are extremely difficult to make, and the actual identification of the various filters and their sequence may have to be made in post hoc analyses (c.f. Duck and Spencer 1972). If this is so then replications of such findings are necessary, and this is made difficult by the problems involved in relying on Time as the main indicator of stage of acquaintance reached for two groups though having known each other for the same length of time may have reached very different stages of acquaintance. They would therefore not be comparable. Until a better measure of stage of acquaintance is developed and greater precision obtained in the prediction of the order of filters then the model cannot be entirely adequately tested.

Attitude and Personality Similarity as Filters

Relevant to the question of the filter sequence is Duck's aim, in formulating his model, of reconciling the conflicting findings of studies of the relationship between attitude similarity and attraction and those of studies concerned with personality similarity. There are two ways in which this aim is achieved; firstly, by viewing 'attitudes' and 'personality' as merely two levels at which an individual's view of the world, or personal construct system, can be analysed, and, secondly, by arguing that since personality, so conceived, is at a higher and more complex level of organization than are attitudes, then information about another's personality will be less available than information about his attitudes until more than a superficial acquaintance is established. Thus personality similarity should play a part in determining interpersonal feelings at a later stage in acquaintance than does attitude similarity.

However there are problems with this argument. Firstly it seems to be based on a view of personality as consisting of the individual's personal constructs, yet studies of attraction have generally used personality inventories to measure personality traits. Duck (1973b p.48) sees such traits as being filtered at a later stage than attitudes but, presumably, at an earlier stage than personal constructs. A problem lies in reconciling a trait approach with that of Personal Construct Theory; while attitudes can be seen as involving evaluative construing of the attitude objects it is difficult to view the personality traits of an individual as straightforwardly reflecting his personal construct system unless he himself construes people, and especially himself, in terms of dimensions similar to those assessed by the test. This problem would be lessened if personality similarity were to be measured in terms of

responses to specific questions but this is generally not the case and trait dimensions have usually formed the basis of the similarity assessment. More recently Duck (1977b) has more strongly restated his position that 'attitudes', 'traits' and 'constructs' all form part of an hierarchical ordering of information about an individual's 'personality'. In fact each of these terms is seen as itself referring to a number of levels in the hierarchy. Such an approach would seem to cry out for a fully fledged theory of personality, or at least a more explicit account of how personality traits may be incorporated into a personal construct theory perspective. The development of the predictive filter model, in which any information about another is used as the basis for inferences about deeper aspects of his 'personality', is a step towards this in that, if, for example, we construe someone as an 'extrovert' then this is a basis for making predictions not only about other such characteristics but also about his view of the world i.e. his personal constructs. Such an argument can in fact be used to account for the fact that, even when real-life relationships have been considered very few personality inventories have provided 'successful' results, for only those tests which 'objectively' produce results similar to those produced 'subjectively' by people in general will adequately reflect their processes of assessment, implication and evaluation. Given the plethora of such tests and the traits they purport to measure it seems unlikely that many of them would possess this kind of 'validity'. This is at least a testable hypothesis.

A further problem with Duck's attempted resolution of the attitude/personality similarity discrepancy is that he has not directly compared their relationships to friendship empirically. In fact none of his studies of real life acquainting (other than the experimental study of McCarthy and Duck 1976) have been concerned with attitude similarity.

Values, as measured by the Allport-Vernon Scale, have been studied (Duck 1973b; Duck and Craig 1978) but studies of attitude similarity are required particularly as value similarity operates as a filter after filtering in terms of personality traits has taken place (Duck and Craig 1978).

Personal Construct Content, Structure and Organisation.

Duck has emphasised similarity of personal construct content as a basis for friendship on the grounds that this is 'available ... to individuals in everyday life' (Duck 1973b, p.57), whereas 'underlying structure' is not so readily available, and because of the problems of reliability and validity involved in the use of repertory grids. However he reports one study, in Duck (1973b), in which a structural approach was adopted and he has continued to argue that similarity of personal construct structure is important but the implication is that ^tif it operates as a filter relatively late in the development of relationships.

Two points arise here. Firstly, it may be useful to distinguish between three different kinds of structural similarity i.e. agreement as to which constructs apply to which elements; similarity in terms of the links between elements; and similarity in terms of the links between constructs. Similarity of the latter sort would seem to be of the highest-order and thus most likely to act as a filter only in relatively established relationships. It is therefore this kind of similarity which is assessed when content and structural similarity are compared in Study 5.

The second issue concerns the role of similarity of construct organisation. While more 'abstract' than construct structure, in that it can be assessed independently of content, it could not be

claimed that organisational similarity is at a deeper level than structural similarity. Given the personality trait-like nature of many personal construct organisation measures (e.g. cognitive complexity) it is not clear whether such similarity should be expected to be important in friendship formation nor, if it is, at what stage of acquaintance it should play a part.

Similarity, Dissimilarity and Validation

In both his theoretical and his empirical work Duck has emphasised the importance of other people's similarity for the validation of an individual's constructs. However this has not meant that the possible importance of dissimilarity has been unrecognised: e.g.

'the consensual validation position may be unduly restrictive in that it suggests a concern only over pre-existing cognitions. One of the benefits of a new relationship is the hope it proffers for the extension of one's experiences ... and it may be consensually validating to be presented with new information which does not conflict with pre-existing beliefs. Indeed new ways of looking at old facts could also be introduced in a consensually validating matter - not as validation for one's view of the facts, necessarily, but as validation for some higher-order constructs ... some individuals may seek in others a way of extending and elaborating their own systems or may be looking for new ways of constructions and action which fits, none the less, with a similar outlook.'

(Duck 1973b, p.150)

His early speculations gained some support from the findings of McCarthy and Duck (1976) that some degree of attitudinal disagreement is preferred to agreement in, what the authors term, 'tentative friendships' of 4-6 months duration. He has continued to theorise about the possible positive role of construct dissimilarity, couching his argument in the terms of Kelly's Choice Corollary and the possibility of the elaboration of a personal construct system by either definition or extension of the system. e.g.

'it seems reasonable that once the person has taken the decision to relate to others he is likely to look first for definition of existing structures and second for extension ... consequent upon extension, however, ... the individual would temporise for a while in order to define those parts of his system that concern the new areas so recently broached. This, in any event, is the logical way to proceed ... whether it is a psychologically important way is an empirical question'.

(Duck 1977a p.389).

He later suggested that 'perhaps development of relationships is characterised by switching between the two methods of elaboration' (Duck 1979, p.291).

Thus the implication is clear: in some circumstances and at certain times construct dissimilarity will be associated with friendship. The problem lies in specifying the circumstances and the times. One necessary circumstance is that higher-order similarity should exist to provide a secure base for the exploration of dissimilarity and McCarthy and Duck (1976) have identified a stage at which some dissimilarity in terms of attitudes seems to be preferred. However this argument for

the possibility of a preference for dissimilarity makes the filter sequence even more difficult to specify and, as yet, no empirical studies have demonstrated the existence of such a preference in the case of personal constructs.

Conclusion

There are a number of theoretical and empirical issues concerning the filter model which require clarification. Perhaps most important among these is the sequencing of the filters for it has not been possible to outline in detail a proposed sequence, nor has the sequence already outlined been fully tested. A number of these issues are addressed by the studies to be reported though it should be noted that they are largely based on the original outline of the model in Duck (1973b).

CHAPTER TWELVE

Study 1: A Longitudinal Investigation of the Relationships between Similarity of Values, Personal Construct Content, Personal Construct Organisation, Construct Meaningfulness and Friendship in a Student Group

A major aim of the first study was to replicate Duck's (1973b) findings that similarity of personal construct content is related to friendship. Further aims of the study were to investigate the relationships of similarity of values and similarity of personal construct organization to friendship and, thus, in comparing the strength of these various relationships to investigate the appropriateness of the order of filters Duck suggested. Finally, following Bender (1968), the ability of friends to subsume each other's constructs was investigated using extremity of rating as the index of this ability.

Duck (1973b) argues that friendship choices will be made on the basis of personal construct similarity only once the initial stages of acquaintance have passed. While **attraction** in these earlier stages is based on, among other things, physical attractiveness and similarity of relatively 'superficial' characteristics, at later stages friendships will become established only if similarity at deeper levels is present i.e. similarity of personal constructs. Thus in order to test the hypothesis that such similarity is related to friendship it is necessary to study a group within which fairly stable relationships have formed. As in Duck's studies a group of students was chosen for this purpose.

The time of initial testing was after six months acquaintance. This particular timing was chosen for two main reasons. Firstly, although six months is not a very long time period in which to get to know the members of a group well, the time period seemed both long enough for most friendships to have formed and yet short enough for there to be some changes in the sociometric network over the succeeding 12 months. This was important since it was planned to test the group again after a year to investigate whether earlier construct similarity was related to later friendship choice. Secondly, Duck (1973b experiment E; Duck and Spencer 1972) found similarity of personal constructs to be related to friendship choices within a group after six months acquaintance. In fact, in their all-female group of 16 students, it was found that after six months acquaintance friends were distinguished from other pairs on the basis of similarity of 'psychological' constructs only. According to his theory, concern with such similarity is a later development than concern with overall construct similarity in the filtering process, so there should be reasonable hope of fairly established relationships having developed in a similar group of students after the same time period.

The first major hypothesis of the present study, then, is that after six months acquaintance friends will be more similar in terms of personal construct content than will pairs of acquaintances. Two sub-hypotheses will also be tested. Firstly similarity of psychological constructs will be analysed separately. While such similarity is expected to be important at a later stage in the development of friendship than is similarity of more general construing, it seems justified to hypothesize that similarity of psychological constructs will be more strongly related to friendship than will overall similarity of constructs, on the assumption that the appropriate stage of relationship development will have been reached.

The second sub-hypothesis follows from Duck's (1973a; 1973b experiment C) finding of sex differences; he found that friendship choices by females were more strongly related to construct similarity than those of males. This was particularly true of cross-sex choices; when choosing female friends males did not differentiate significantly between these and other females, not so chosen, on the basis of construct similarity. It was hypothesised that the same pattern would be repeated in this study.

Although proposing that similarity of attitudes acts as a filter relatively early in the acquaintance process Duck has provided no direct test of the power of the effects of similarity of attitudes and similarity of personal constructs. In one study (Duck 1973b experiment A) he compared construct similarity with value similarity (as measured by the Allport-Vernon Scale of Values) for their ability to distinguish between friends and non-friends in a group of students who had known each other for three to four years. Friends were found to share more constructs than non-friends, but to be no more similar in values. This is as would have been predicted by the filter model in which value similarity would have been expected to play a part earlier in acquaintance. It is obviously difficult to predict after how long an acquaintanceship the 'value similarity filtering' stage will be reached but presumably, it will be at a stage intermediate between that at which personality trait similarity will be important and that at which personal construct similarity will be important. Thus, in the present group it may be predicted that if personal construct similarity does differentiate between pairs of friends and non-friends, value similarity will not do so; if however, friendships are less well established value similarity should discriminate. However since there is no way of assessing the extent to which relationships have developed it is simplest to hypothesise that

friends will be more similar in their values than non-friends, but that this effect will be weaker than for personal construct similarity.

Duck's (1973b) reasons for concentrating on personal construct content rather than structure include the difficulties involved in the use of repertory grids (discussed in earlier chapters) and, most importantly, the fact that it is surface content rather than underlying structure which is available, in the normal course of events, to individuals in everyday life' (p.57). Thus, while Tesser (1971; Johnson and Tesser 1972) showed that attraction was a function of similarity of both attitude content and attitude structure and Triandis (1959) that both 'categoric' (construct content) similarity and 'syndetic' (structural) similarity were positively associated with effectiveness and liking, Duck argues that information about another's construct system structure normally becomes available only after information about the content of the system has been gained. Thus if filtering is to take place in terms of structural similarity this will occur at a later stage of friendship development than filtering in terms of similarity of construct content.

The position of construct structure will be returned to in introducing the final study. In the present study measures of construct organisation will be used. The distinction between construct system structure and construct system organisation is not one which is made by Duck but is one which has importance in the specification of the order of filters. Construct system organisation may be considered independently of the constructs involved and this has led to, for example, the construct of cognitive complexity (Bieri (1955)). Since this may be viewed as a personality trait it could be argued that, since the postulated sequence of filters places similarity of personality

traits as an early determinant of liking (cf Duck 1973c), similarity in degree of cognitive complexity will act as a filter earlier in acquaintance development than similarity of construct content. However given that information about the degree of organisation present in another's construct system would normally become available only as information about the constructs themselves became available, this is not a very plausible argument. The possibility of viewing cognitive complexity as a trait does suggest, though, that it does not represent a 'deeper, more personal' aspect of an individual's personality and, it may be argued, constructions of another's degree of complexity in construing may be made along with constructions of his construing i.e. it is proposed here that similarity of degree of construct system organisation occurs as a filter at about the same time, or only slightly later, as construct content similarity and well before similarity of construct system structure which is a much finer gauge of similarity. That similarity in degree of construct system organisation can lead to more positive interpersonal relationships is supported by the findings of Bender (1968) in a correlational study of friendship and 'dating', of Johnston and Centers (1973) in an attraction paradigm type experiment, and of Landfield (1971) in a study of therapists and their clients. It is therefore hypothesised that such similarity will be related to friendship in the present study.

As demonstrated in Chapter 4 however a problem lies in the choice of a suitable measure. Many measures have been devised and their interrelationships are in doubt (cf. Vannoy 1965; Adams-Webber 1970c; Seaman and Koenig 1974; Kuusinen and Nystedt 1975a; Honess 1976; Bavelas et al 1976). The three studies mentioned at the end of the last paragraph made use of three different measures thus not making the choice any more straightforward. Since the study of Bender (1968) is closest

in both method and aims, in that it dealt with real-life relationships, to the present study, it was decided to use the same measure as had been used in that study. This was the percentage of variance accounted for by the first principal component after a grid containing elicited constructs had been subjected to analysis by INGRID.

This particular measure has been used relatively little and may be unreliable (Sperlinger 1976) and it was therefore decided to back this measure up with the modification of Bieri's (1955) measure introduced by Bieri et al (1966). This was the measure used by Johnston and Centers (1973). Since the Bieri et al measure involves the completion of a repertory grid containing provided constructs a third measure could be derived by submitting this grid to INGRID analysis.

It has been hypothesised that after six months acquaintance friends will be more similar than non-friends in respect of values, construct content and construct organisation. Following Duck (1973b) however it is postulated that the three types of similarity play their part in a sequence of filters. Thus value similarity will be more important in less established relationships while similarity of construct content will become important once relationships are more established, as will similarity of construct organisation. At six months acquaintance it is not clear how established the relationships within the group will have become; however, after another 12 months, friendships should have become more established and so it is hypothesised any discriminating power, between friends and non-friends, that value similarity may have had will weaken, while similarity of construct content, especially of 'psychological' constructs, and of construct system organisation will be more powerful in discriminating when sociometric choices are made after 18 months acquaintance. Since it is crucial for Duck's theory that similarity precedes friendship (though it may also follow from it)

the degree of similarity revealed after six months acquaintance should be related to sociometric choices after 18 months.

One of the reasons put forward by Duck (1973b) for the importance of similarity of construct content for friendship is that such similarity aids in interpersonal understanding. While this may be generally true, commonality of construing, Kelly points out, is neither necessary nor sufficient for such understanding and therefore it was decided to follow Bender (1968) in more directly tapping friends ability to subsume each other's constructs. It was hypothesised that in making ratings of others, subjects would make more extreme ratings on their own constructs than on constructs elicited from another, but that subjects' ratings on constructs elicited from friends would be more extreme than constructs elicited from others not named as friends. In other words it was hypothesised that friends' constructs would be more 'meaningful' than the constructs of non-friends. If Duck's argument that similarity aids in interpersonal understanding is correct then it follows that ratings made by subjects on others' constructs which have been judged as similar to some of their own constructs should be more extreme than their ratings on others' constructs not so judged. It was therefore planned to test this in the present study.

Finally, a tentative hypothesis was made that cognitively complex subjects would support the above hypotheses relating friendship and similarity of construct content, and friendship and meaningfulness of others constructs, to a greater extent than cognitively simple subjects. This follows from the results of studies (e.g. Bieri 1955; Adams-Webber 1969; Adams-Webber et al 1972) which indicate the tendency for cognitively simple individuals unwarrantedly to assume similarity between

themselves and others. Cognitively complex subjects should therefore discriminate more accurately between similar and dissimilar others. That the hypothesis is put forward tentatively, and not at all in the case of similarity of construct organisation, is due to the finding of Johnston and Centers (1973) that cognitively simple subjects were more extreme in their attraction ratings of similar and dissimilar others, positively rated and negatively rated respectively, than were cognitively complex subjects.

To summarize, then, it has been hypothesised that friendship choices in a group of six months' acquaintance will be positively related to similarity of values, personal construct content and organisation, and to the 'meaningfulness' of others' constructs. Since the type of similarity which differentiates friends from non-friends is theoretically dependent upon the stage of acquaintance reached it was further hypothesised that the kinds of similarity at six months which would predict friendship at 18 months acquaintance would be similarity of 'psychological' constructs and similarity of construct organisation. Individual differences, in terms of sex and cognitive complexity were also hypothesised.

METHOD

The data for this study were collected on three separate occasions and for clarity of exposition the subjects, materials and procedures involved on each of these occasions are reported separately below. The basic design of the study was as follows. A group of first year Psychology students acted as subjects. On the first occasion of testing these subjects completed two grids: the first containing elicited constructs and the second, being a measure of cognitive

complexity, containing provided constructs. The group had been at University for roughly six months at this time. The second set of data was collected a few weeks later. Subjects were seen individually and were asked to supply the names of their friends in the group, to complete an Allport-Vernon Scale of Values and to make a series of ratings on dimensions derived from their own Repgrids and those of others in the group whom they had or had not named as friends. The final session took place a year later and on this occasion subjects were again asked to name their friends in the group.

Six Months Acquaintance: Group Testing

Subjects: Of a total group of 27 first year Psychology students at Bedford College, 25 were present at the initial session. Sixteen were female and nine male; the two missing individuals were both male.

Materials: (a) Role title list. The 18 roles listed were father, mother, brother, sister, spouse, ex-girlfriend (ex-boyfriend), current girlfriend (current boyfriend), male friend, female friend, disliked male, disliked female, favourite teacher, person you admire, rejecting person, threatening person, happy person, most intelligent person you know personally, self.

(b) Repertory Grid sheet. A blank sheet is shown in Appendix 1. A 12x12 grid was chosen as being reasonably large yet completable within the time available. Each grid had been prepared such that in each row of each grid a cross appeared in each of three squares. The positions of the crosses were determined randomly on each grid within the constraints that all 12 columns were checked an equal number of times (i.e. three times) and that the same three crosses did not appear together on more than one row.

(c) A sheet containing instructions for the completion of a grid derived from Bieri et al (1966). The eight provided construct dimensions are taken from Black (1971). Four of the scales were, however, reversed in order to minimise the effects of response set. The type of rating used was taken from Vannoy (1965). (See Appendix 2).

Procedure: The two grids were completed by the subjects as part of a practical class on psychometric methods. They were assured that the information they provided would be treated confidentially and also 'warned' of a follow-up study in which it was hoped they would take part. Role title lists and repertory grid sheets were then handed out. Subjects were told that the interest of the experimenter was in the ways in which they categorized people, and that the repertory grid was a method for tapping these. From the role title list they were to pick out 12 roles, including 'self', to which they could fit 12 different individuals whom they knew, i.e. one individual to one role. The names or initials of these 12 people were then to be written into the boxes at the top of the columns of the repertory grids, so that each column corresponded to a different individual. It was stressed that some disliked individuals should be included if possible. Once subjects had all completed their element choices, the following instructions were read out:

'Each column in the grid now corresponds to one particular individual. On each row of the grid there are three crosses marked - indicating three different individuals. On each row what you have to do is: see which individuals are indicated, form a mental picture of those three people and then think of a way in which two of them are similar and, at the same time, different from the third. When you have thought of this contrast

write the way in which the two people are similar in the 'How Similar' column and the way in which the other person differs in the 'How Different' column. Do this for each row of the grid.

When you have done this you are to go back and rate each of the 12 individuals on all of the constructs using the 5-point scale shown at the top of the grid.'

Two examples were done on the blackboard using the constructs 'fair-haired' versus 'dark-haired' and 'middle-class' versus 'working-class'. All subjects appeared to be familiar with the use of rating scales. They were told that the direction of the scale was always to be that indicated at the top of the grid, i.e. '1' always referred to the left hand 'How Similar' term while '5' always referred to the right hand 'How Different' term. The figure 3 was to be used either if both polar terms applied equally or if the construct as a whole was not relevant for any particular individual. Any questions were answered mostly in terms of the two examples which had already been given.

Subjects were asked to put their name on the Repgrid sheet and to put up their hand when they had finished. They would then be given another task to do, similar to the one just completed. As each subject finished his completed sheets were taken from him and he was handed the sheet shown in Appendix 2 which contained an 8 x 8 grid with provided constructs. Since this sheet had instructions already on it little description was caused by this procedure. Subjects were allowed to leave once this grid had been completed.

Six Months Acquaintance: Individual Testing

The above group session took place just before the Easter vacation. About five weeks later a follow-up was performed. Subjects had thus known each other for over seven months but for reasons of convenience the

'six months acquaintance' label is retained; it being assumed that little change in friendship patterns will have taken place over the vacation.

Subjects: Of the 25 subjects who took part in the original testing session, four could not be contacted. Thus 21 subjects, 13 females and eight males, took part in this follow-up.

Materials: (a) Allport-Vernon Scale of Values.

(b) Six rating sheets; each sheet consisting of thirty 11-point scales made up as follows: (i) Six constructs taken from the subject's original Repgrid. These constructs were chosen randomly except that constructs which did not allow for a range of ratings (e.g. Male-Female) were not used.

(ii) Six constructs taken from the Repgrid of the person whom the subject named first as one of his friends (see 'procedure' below). The constructs which were used were those with the same numbers as those which had been taken from the subject's own grid, with the proviso that pure dichotomies were not used.

(iii) Six constructs taken from the Repgrid of the person named second by the subject as one of his friends.

(iv) Six constructs similarly chosen from the Repgrid of a randomly selected individual not named by the subject as one of his friends.

(v) Six constructs similarly chosen from the Repgrid of another randomly selected non-friend.

Friends and 'random' others were always matched for sex. The order of the 30 scales was random. A sample rating sheet is shown in Appendix 3.

Procedure: Each subject was tested individually in a small tutorial room. After thanking the subject for taking part in the follow-up the experimenter explained that there were three parts to the study which together would take 40-60 minutes to complete. The experimenter then told the subject that he was interested in friendship formation within groups and asked for the names of his or her particular friends within the Psychology group'. When these names had been provided the subject was given a copy of the Allport-Vernon Scale of Values to complete, and the experimenter left the room, explaining that he would return for the final part of the study. The subject was told to score the Value Scale if the experimenter had not returned by the time it was finished.

During the next 15 minutes the experimenter made up the rating scales as described above. Each 30 scale sheet consisted of two 15 scale sheets stapled together. Six photocopies of the original were made and these were the ones completed by the subject. The experimenter usually managed to return as the subject was completing the Allport-Vernon Scale.

When the Value Scales had been completed the subject was asked to think of three male friends and three female friends who had not been used as elements in the original Repertory Grid. In order to remind subjects of the previous task they were shown a copy of the role title list used. Once the subject seemed confident about the six people chosen he or she was given the rating sheets, told that there were 30 scales for each of the six, and the use of the rating scale was explained. The mid-point was to be used only when the two poles of the construct applied equally; if the dimension as a whole was irrelevant in any particular case then the subject was to indicate this by writing 'N/A' (for 'non-applicable'). On each sheet the subject was asked to put the initials and sex of the ratee.

The subject was left to complete the scales. When he had finished he was again thanked for taking part and usually asked whether he had recognised any of the constructs.

Eighteen Months Acquaintance

Subjects: During the first weeks of the summer term of their second year (i.e. roughly one year after the above sessions) the members of the group were again contacted and asked to take part in another follow-up. Of the 21 subjects who had provided full data one year previously one individual had withdrawn from the course and another was unable to attend College at that time. Of the four subjects who had attended the original group session but not the second individual testing two took part in this follow-up and two refused. Thus the group consisted of 9 males and 14 females.

Procedure: The sociometric data required for this study was collected concurrently with that for Study 4. Each individual was tested individually; after the elicitation of constructs and laddering procedures described in Study 4 were completed subjects were handed a questionnaire which required them to name their close friends in the Psychology group, and also to list those other members of the group with whom they were friendly. This procedure had been successfully used in the previously completed Studies 2 and 3 where it was introduced in an attempt to tap different 'levels' of friendship. Subjects were thanked and paid 50 pence for their participation.

RESULTS

Sociometric Data

Six Months Acquaintance. The friendship choices made by the group are shown in Table 12.1. Within the group of 21 subjects who attended both sessions at six months 100 choices were made, of which 66 were reciprocated - a number which is probably slightly lowered by the refusal of one subject to name his friends. Choices of other members of the group, who did not take part in one or both of the testing sessions, as friends are also shown.

Eighteen Months Acquaintance. Subjects provided names of friends at two levels: 'close' friends and 'friendly' others. In Table 12.2 are shown the choices made by subjects of close friends only: thus in this matrix a reciprocated choice means that both individuals named each other as a close friend. Of a total of 33 such choices 20 are reciprocated. Three of these unreciprocated choices remain so even when choices of 'friendly' others are also considered i.e. on three occasions a subject named another as a 'close' friend but was not named at all in return. Table 12.3 shows all the friendship choices made within the group, regardless of category. One hundred and thirty seven choices were made by the 23 subjects within the group of 23. That this is rather higher than the number of choices made the year previously does not seem to be due to the different sociometric questions asked but rather to differences between some of the subjects who provided sociometric data on one occasion but not on the other. This is indicated by comparing the number of choices made by the 19 subjects who provided data on both occasions. Within this group 87 choices were made at six months, 58 of which were reciprocated, and 91 choices were made at eighteen

Table 12.1. Sociometric Matrix after Six Months
Acquaintance (Study 1).

Choser	Sex	S No.	Chosen																					F ^a F ^a F ^a M ^a M ^b M ^b	22 23 24 25 26 27																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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Note: x = Reciprocated choice
/ = Unreciprocated choice
a = these subjects were present at the group testing but did not return to the follow-up.
b = these members of the group took part in neither testing session.
c = this subject refused to name his friends.

Table 12.2. Sociometric Matrix Showing 'Close' Friendship Choices After 18 months Acquaintance .
(Study 1 and Study 4)

Chooser																											
Sex	S.No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	16	18	19	20	21	22	25	26	27	15 ^a	23 ^a	24 ^a
M	1	-																									
M	2		-																								
M	3			-																							
F	4				-																						
M	5					-																					
F	6						-	x																			
F	7						x	-																			
F	8								-																		
M	9									-																	
F	10								x																		
F	11									-																	
F	12										-																
F	13											-															
F	14												x														
F	16													-													
F	18														-												
F	19															-											
F	20																-										
F	21																	-									
M	22																			-							
F	25																					-					
M	26																						-				
M	27																							-			

Notes: a = Members of the group not providing sociometric information
x = reciprocated choice
/ = unreciprocated choice

months, 66 of which were reciprocated. There is thus a small increase in the percentage of reciprocated choices made but only a very slight increase in the total number of choices made.

Comparisons of Similarity

The same basic procedure was followed in all of the comparisons to be made below. Derived from Duck (1973b) the procedure involves treating reciprocated choices as indicative of friendship and regarding unreciprocated choices as not indicating the presence of an established relationship and thus, for purposes of analysis, as no different from the case where no choices are made at all. For each subject two similarity scores could be derived; the first indicates his mean degree of similarity to his friends and the second his mean degree of similarity with all other subjects ('nominal' pairs).

This was the procedure used in all the comparisons which involved friendship choices made at six months, and it differs slightly from that employed in the analysis of sociometric choices made after 18 months. In this latter case three scores could, in principle, be calculated for each subject. The first of these was the mean similarity score between the subject and his 'close friends' i.e. those individuals with whom the subject had a reciprocated close friendship. The second was the mean similarity score between the subject and his 'friends', which included all those reciprocated choices in which both individuals had not named each other as a close friend. Finally, the category of 'nominal' pairs included all other pairings.

In order to compare the degree of similarity exhibited by friends and by nominal pairs after six months acquaintance a correlated t-test was used, while a non-parametric trend test (Ferguson 1965) was employed

to assess the relationship between similarity and the friendship choices of a year later.

Value Similarity

For the 21 subjects who had completed an Allport-Vernon Scale six scores, one on each value dimension, were available. The scores of each subject were correlated with the score of every other subject to give a matrix which indicated the degree of similarity between every pair of subjects. Spearman's rho was the correlation involved. In order to compare friends and nominal pairs, as described below, each entry in this matrix was squared (with sign being retained), and it was this second matrix which formed the basis for all further analysis.

Six Months Acquaintance: In order to test the hypothesis that friends would have more similar values than nominal pairs two scores were calculated for each subject. These were obtained by comparing the sociometric matrix with the transformed matrix of correlations described above and calculating the mean similarity score between the subjects and his friends, and the mean similarity score between the subject and all remaining subjects (i.e. 'nominal' pairings).

Such scores could be calculated for 19 subjects; the two others not being involved in any reciprocated choices. No support for the hypothesis was obtained. In fact friends were found to be slightly less similar than nominal pairs (Friends : mean similarity = 0.298; nominal pairs, mean similarity = 0.334; $t = -1.137$, 18 d.f., n.s.).

Eighteen Months Acquaintance: The transformed correlation matrix was compared with the sociometric matrix obtained after 18 months acquaintance and up to three scores were derived for each subject. The first was his mean similarity score with his 'close friends', the second his mean similarity score with his 'friends' and thirdly, his mean similarity score with the remaining subjects.

A non-parametric trend test on the available data from 18 subjects revealed no trend for friendship to be associated with similarity ($S = 0$). The mean similarity scores for the three categories, though irrelevant to the test, also reveal the lack of association since they are all very similar (0.311; 0.335 and 0.324 for close friends, friends and nominal pairs respectively).

It seems, then, that in this group there is no relationship between value similarity and liking. One interpretation of this finding, in line with Duck's theorising, is that, even after only six months acquaintance, the stage of filtering in terms of values had passed and that similarity of personal constructs might therefore be expected to provide the basis for friendship.

Similarity of personal construct content

Similarity of personal construct content was assessed in the manner used by Duck (1973b). The constructs produced by each subject were typed on index cards, two constructs on each card. A check was made to see whether any subject had repeated a construct: only one instance of the construct would have been allowed to remain, but, in fact, no subject did repeat himself.

Three independent judges assessed similarity of constructs. Each

subject's constructs were compared with the constructs of each other subject; whenever a judge considered that any two constructs had the same or a very similar meaning then the two constructs were noted down as being potentially 'conceptually' similar. The final categorisation of two constructs as conceptually similar or dissimilar was based on a simple majority verdict, i.e. if two judges agreed then their decision was taken as final. Following Duck (1973b), Kendal's coefficient of concordance was used to assess the reliability of the judges' ratings, giving $W = 0.721$ ($p < .001$).

A similarity matrix was drawn up to indicate the number of constructs shared by any two subjects. From this matrix were selected the comparisons of friends and nominal pairs reported below.

Six Months Acquaintance: Although construct similarity scores had been obtained for the four subjects (22-25) who took part in the initial group testing but not in the individual testing, they were not included in the analysis since their sociometric choices were not known. As with the Allport-Vernon data two scores were derived for each of the other subjects. The first was the mean number of constructs shared by a subject with his friends (i.e. reciprocated choices only), while the second was the mean number of constructs shared with all other subjects (i.e. nominal pairs). In this way 19¹ pairs of scores were obtained and these were compared using a related t-test.

The results showed that although friends shared slightly more constructs than nominal pairs the difference was not significant (mean number of constructs shared = 1.516 and 1.320 for friends and nominal pairs respectively; $t = 1.108$, 18 d.f., n.s.). Thus both similarity of values and similarity of personal constructs failed to discriminate between pairs of friends and nominal pairs. One possible explanation of this failure is that the group had reached the stage of acquaintance

¹ Two subjects were not involved in any reciprocated choices.

in which friendship choices are based on similarity of 'psychological' constructs only (cf. Duck 1973b). This was tested by having the three judges sort each construct into one of four categories (Duck 1973b)

(a) Psychological: 'those describing a character, personality or cognitive attribute of an individual'.

(b) Role: 'those which described habitual activities or roles'.

(c) Interaction: those describing 'interaction abilities and styles'

(d) Other: constructs not clearly assignable to the other categories.

Sixty five per cent of constructs were assigned to the Psychological category and a new similarity matrix was constructed showing the number of psychological constructs shared by all pairs of subjects. Friendship pairs were compared with nominal pairs, as before, but again the difference was non-significant (means = 0.747 and 0.683 respectively, $t = 0.657$, 18 d.f., n.s.).

Sex differences in the extent to which friendship choices were related to personal construct similarity were predicted, and the two construct similarity matrices were therefore split by sex of chooser and by sex of chosen. Friends and nominal pairs were compared as usual; the results are presented in Table 12.4.

None of the comparisons shown in Table 12.4 approach significance thus indicating that the non-significant findings for the whole group were not due to differences between the sexes in the relationship of similarity to friendship. Rather it seems that, in this particular group, at six months acquaintance there is no support for the hypothesis that friendships are formed on the basis of personal construct similarity. It could be the case that friendships in the group were not yet established and that, therefore, similarity of personal constructs was not yet acting as a filter in development of friendship. The non-significant findings for value

Table 12.4. Differences between the mean similarity scores of friendship and nominal pairs as a function of type of construct, and of sex of chooser and sex of chosen.

Constructs		Friendship Mean Similarity Score	Nominal Mean Similarity Score	t	
All	M-M	1.200	1.067	0.8375	4 d.f.
	M-F	1.000	1.079	-0.1905	5 d.f.
	F-M	1.306	1.064	0.5400	5 d.f.
	F-F	1.740	1.660	0.2670	12 d.f.
Psychological					
	M-M	0.800	0.707	0.2962	4 d.f.
	M-F	0.333	0.490	-0.8661	5 d.f.
	F-M	0.611	0.506	0.3963	5 d.f.
	F-F	0.831	0.861	-0.0005	12 d.f.

Note: Sex of chooser given first in all cases.

similarity do not, however, provide support for this view since value similarity would be expected to differentiate between friends and nominal pairs if friendships were at an earlier stage of development. Given these findings a key test of the hypothesis that friendship follows from similarity of personal constructs involves the relationship of similarity at six months acquaintance to friendship choices made 12 months later.

Eighteen Months Acquaintance: Twenty one subjects were involved in this comparison. Subjects 22 and 25 who had provided constructs but no sociometric information at six months acquaintance were included, while two other subjects who had been included in the earlier analyses did not take part in this follow-up. Two similarity matrices were constructed showing the number of constructs shared by these 21 subjects; one matrix showing similarity of 'psychological' constructs only.

Three scores were potentially derivable for each subject from each matrix. The first indicating the mean number of constructs shared with the subject's close friends, the second being the mean number of constructs shared with his friends and the third the mean number of constructs shared with all other subjects.

Non-parametric trend tests showed that there was no relationship between similarity of personal constructs after six months and friendship after 18 months when all constructs were considered ($S = 4$, $z < 1$, n.s.; means¹: close friends : 1.639, friends : 1.314, nominal pairs: 1.338) and when psychological constructs only were considered ($S = 2$, $z < 1$, n.s.; means: close friends : 1.042, friends : 0.507, nominal pairs : 0.762). Sex differences were investigated but none of the eight comparisons approached significance. For similarity of all constructs the trends obtained were, with sex of choser given first, : male-male : $S = -1$; male-female : $S = -5$; female-male : $S = 1$, female-female : $S = 2$ while for similarity of psychological constructs only the following trends were obtained : male-male : $S = 1$; male-female : $S = -5$; female-male : $S = -3$; female-female : $S = 2$.

The data does not therefore provide any support for the hypothesis that early construct similarity will be related to later friendship choice and indeed fails to indicate the presence of any link between similarity

¹ The means given are not strictly comparable since they are based on different Ns and they are presented for guidance only.

of personal construct similarity and friendship. It remains to be seen whether similarity of personal construct organisation will be so linked.

Similarity of Personal Construct Organisation

Given the failure of similarity of both values and personal construct content to be related to sociometric choices, the fate of 'the similarity hypothesis' now rests on the relationship between similarity of personal construct organisation (i.e. cognitive complexity) and friendship. Three measures of cognitive complexity were used:

(a) The percentage of variance accounted for by the first principal component extracted from the 12 x 12 repertory grid completed by the subject. This measure was designated RC%.

(b) The same measure derived from the analysis of the 8 x 8 grid with provided constructs completed by each subject. This measure was designated CC%.

(c) The measure of Bieri et al (1966). Four of the scales were reversed before the measure, designated CC, was assessed.

The scores of each subject are shown in Appendix 4. It should be noted that, using all of these measures, a high score denotes relative 'simplicity'.

As had been suspected the three measures were found to be unrelated to each other. Spearman rank correlations indicate that even the two measures, CC% and CC, derived from the same grid were not significantly related ($\rho = 0.27$, $N = 24$, n.s.) and that neither was at all related to RC% (CC% : $\rho = 0.003$; CC : $\rho = -0.034$; $N = 24$, n.s.). Because of the independence of the three measures they were all considered when the relationship between sociometric choices and similarity of construct organisation was investigated.

Six Months Acquaintance: For each of the three measures a similarity matrix was constructed by taking the absolute difference between the scores of every two subjects. As before two scores could then be calculated for each subject indicating the mean difference between his score and those of his friends, and between his score and those of the other subjects. The similarity hypothesis predicts that friends will be less different than nominal pairs.

In none of the comparisons involving all subjects was this hypothesis supported. With RC% as the complexity measure there was a very slight tendency for friends to be less similar than nominal pairs (Friends : mean difference = 11.52; Nominal pairs : mean difference = 11.22; $t = -0.222$, 18 d.f., n.s.). The results were similar when CC scores were considered, with the mean difference between friends being 10.32 and that between nominal pairs being 9.32 ($t = -1.174$, 17 d.f., n.s.). Only when CC% scores were considered was there any tendency at all for the results to be in the predicted direction (means : friends = 11.02; nominal pairs = 11.91, $t = 0.863$, 17 d.f., n.s.). These results then are in line with those presented above and show that similarity of personal construct organisation, like similarity of values and of personal construct content, was not related to friendship choices within this group after six months acquaintance.

Some significant differences did emerge, however, when the group was split by sex of chooser and sex of chosen. As shown in Table 12.5 there were significant tendencies for male friends to be more similar than nominal pairs of males using both CC% (means : friends = 5.19; nominal pairs = 15.44; $t = 5.358$, 3 d.f. $p < .02$) and CC (means : friends = 3.00; nominal pairs = 4.20; $t = 7.03$, 3 d.f. $p < .01$). However in both cases the number of degrees of freedom is such that little reliance can be placed upon these results. The other significant finding was that females chose

as friends males who were less similar to them than were other males (means: friends = 12.83; nominal pairs = 10.67; $t = -3.86$, 5 d.f., $p < .02$). These findings were unexpected and, given the low number of subjects involved in each comparison, are difficult to interpret. Further investigation would be necessary before any firm conclusions about sex differences in this respect could be drawn, though the very different relationships of similarity of CC to choices of male friends by males and females may be related to significant sex differences in both the means and variance of CC scores (means : males = 67.25; females = 58.5; $t = 3.348$, 22 d.f., $p < .01$; variances : males = 3.96; females = 8.83; $F = 4.99$, d.f. = 15, 7, $p < .05$).

Table 12.5. Differences in levels of cognitive complexity between friendship and nominal pairs as a function of measure of complexity, and sex of chooser and sex of chosen.

Complexity Measure		Friendship Mean Difference	Nominal Mean Difference
RC%	M-M	16.94	12.42
	M-F	11.27	11.36
	F-M	15.02	12.29
	F-F	10.37	11.29
CC%	M-M	5.19 ^{**}	15.44 ^{***}
	M-F	12.69	11.82
	F-M	11.96	10.95
	F-F	10.84	10.70
CC	M-M	3.00 ^{***}	4.20 ^{***}
	M-F	11.47	10.58
	F-M	12.83 ^{**}	10.67 ^{**}
	F-F	9.53	9.69

* $p < .02$; *** $p < .01$.

Note: Sex of chooser given first.

Eighteen Months Acquaintance: The usual procedure was adopted. The similarity matrices based on grids completed after six months acquaintance were compared with the friendship choices made a year later. Up to three scores were then derived for each subject and these were submitted to a non-parametric trend analysis to determine whether similarity at six months was related to friendship choices at 18 months.

The comparisons involving the two measures derived from principal components analysis produced results very similar to those obtained a year previously. Neither comparison was significant but the two measures differed slightly in that similarity of CC% was positively related to friendship choices ($S = 7, z < 1, n.s.$) while there was a very slight negative relationship between friendship choices and similarity of RC% ($S = -4, z < 1, n.s.$). The third comparison, that involving CC scores, did however show a change in the relationship of similarity to friendship. While a year previously there had been a non-significant negative relationship between friendship and similarity there was now a significant positive relationship ($S = 15, z = 2.06, p < .05$).¹

The data was split by sex of chooser and of chosen and this produced no significant trends when any of the measures of complexity were used. In terms of the findings concerning the relationship of similarity of CC to friendship choices at six and 18 months there seemed to be a slight suggestion that the change was due mainly to the female choosers. However, this may have simply reflected the greater number of female subjects in the group. On the whole the pattern of results obtained in this analysis was very similar to that obtained one year previously and, for this reason, these results are presented in Appendix 5.

¹ The mean differences obtained were: close friends: 6.65; friends: 9.34; nominal pairs: 10.05.

Of the three main types of similarity involved in this study only similarity of personal construct organisation has been found to be related to friendship choice. However even here the similarity hypothesis is not strongly supported for only one of the three measures of cognitive complexity is involved. The significant sex differences shown in Table 12.5 are probably best explained in terms of the low numbers involved in each comparison and in terms of sex differences in complexity scores, rather than being taken as revealing genuine sex differences in responses to similarity of construct organisation. Thus the finding that similarity of CC at six months was related to sociometric choices at 18 months provides all the support for the notion that similarity attracts so far obtained in this study.

Extremity of Response

The hypothesis to be tested here is that friends can better construe each others constructs than can acquaintances i.e. friends' constructs are more meaningful than are those of acquaintances. The hypothesis was tested after six months acquaintance only.

Each subject had rated six different individuals on 30 construct dimensions; six of which were his own, 12 were taken from two of his friends grids and 12 taken from the grids of two other subjects not named as friends. The one exception to this was Subject 11 who named no friends and who therefore made his ratings on constructs drawn from four randomly selected grids. For all other subjects three scores were calculated. These were the extremity scores obtained on the constructs derived from each of the three sources. Extremity scores were obtained by taking the absolute sum of the ratings on a given set of constructs and then dividing by the number of ratings.

The prediction is that subjects would produce the most extreme ratings on their own constructs and that ratings on their friends' constructs would be more extreme than ratings on constructs taken from randomly chosen grids. The non-parametric trend test used in previous analyses showed that only slight support for this hypothesis could be found ($S = 12$, $z = 1.29$ $p < .20$), though further analysis revealed that the hypothesis was almost significantly supported by the female subjects ($S = 14$, $z = 1.90$, $p < .06$) and not at all supported by the males ($S = -2$, n.s.). The sex difference obtained does not, however, lend any support to the hypothesis that ratings on constructs taken from friends' grids would be more extreme than ratings on constructs taken from others' grids, for the trend obtained with the female subjects is due entirely to their ratings on their own constructs being more extreme than their ratings on other constructs. This is shown clearly in Table 12.6 and is also indicated by the mean rankings of extremity of response of the female subjects: the mean ranking on the subjects own constructs being 1.38, on friends' constructs 2.35 and on others' constructs 2.27. The female subjects' data thus merely replicates the well-established finding that subjects make more extreme ratings on their own constructs. Somewhat surprisingly the same is not true of the male subjects in this study,

Table 12.6. Mean Extremity Ratings on different sets of constructs.

	<u>Derivation of Constructs</u>		
	<u>Subjects Grid</u>	<u>Friends Grid</u>	<u>Others Grid</u>
Male (N = 8)	2.121	2.175	2.01
Female (N = 13)	2.737	2.573	2.592
Both sexes (N = 21)	2.503	2.454	2.407

who produce less extreme ratings on their own constructs than on their friends. However the difference is slight.

It seems then that Bender's finding that subjects made more extreme ratings on constructs produced by people they liked than on constructs produced by other people has not been replicated, and the above analysis, like previous ones, fails to distinguish between friends and nominal others. One hypothesis remains to be ^{re}tested: that ratings made by subjects on other's constructs which are similar to their own will be more extreme than ratings on non-similar constructs. This was tested by having all of the constructs on a subjects rating sheet, other than his own, classified as similar or not similar to his own on the basis of the judgements made previously. Mean extremity ratings for these constructs were compared by means of a paired t-test.

Overall the means were in the predicted direction but the difference was not significant (mean extremity: similar constructs = 2.495; non-similar constructs = 2.405, $t = 0.913$, 19 d.f., n.s.). Given that females had produced more extreme ratings on their own constructs while males had not it seemed likely that females would support this present hypothesis while males would not. Further analysis revealed no significant differences though the direction of the results were as predicted (females: similar mean = 2.647, non-similar mean = 2.570, $t = 1.046$, 12 d.f., n.s., males: similar mean = 2.214, non-similar mean = 2.098, $t = 0.443$, 6 d.f., n.s.).

One final analysis was undertaken in which the source of the constructs was also considered. It was thought that friends' constructs which were similar to a subject's own might be more 'important' to the subject than the similar constructs of the randomly chosen others. The results of this analysis are shown in Table 12.7, which reveals that the failure of the above analysis to distinguish similar from non-similar constructs for the

Table 12.7. Mean Extremity Ratings on Similar and Non-Similar
Constructs from two Different Sources.

<u>Constructs</u>		<u>All Subjects</u>	<u>Males</u>	<u>Females</u>
Friends	Similar	2.612	1.861	2.838
Friends	Non-Similar	2.490	1.929	2.659
	t	0.877	-0.106	2.741*
	d.f.	12	2	9
Random	Similar	2.520	2.383	2.535
Random	Non-Similar	2.495	2.049	2.680
	t	0.253	1.712	-0.694
	d.f.	16	4	12

* $p < .05$ (2-tailed).

female subjects was due to the constructs drawn from randomly chosen grids only. Females do make significantly more extreme responses on the similar constructs of their friends than on the non-similar constructs of their friends ($t = 2.741$, 9 d.f., $p < .05$). For the male subjects the numbers involved in the comparisons are too small to enable any conclusions to be drawn from the data, though the means obtained indicate a possible sex difference in that the male subjects have a tendency to rate more extremely on similar constructs of non-friends than on non-similar constructs of non-friends ($t = 1.712$, 4 d.f. $p < .10$).

Overall the results of this section again fail to support any major hypothesis relating to friendship. The finding that female subjects do discriminate between friends' constructs which are similar to their own

and those which are not is however, at least suggestive of a possible difference between the kind of constructs shared with friends and those shared with others, and this finding forms the basis of hypotheses to be tested in later studies.

Individual Differences

It had been hypothesised that the relationship between friendship and both construct similarity and extremity rating would be stronger for cognitively complex than for cognitively simple subjects. Neither of these hypotheses are supported using any of the complexity measures. For each of those measures subjects were categorised as 'simple' or 'complex' on the basis of a split at the median score. Given the sex difference previously noted this meant that all of the subjects categorised as complex according to their CC score were female, but the sexes were more evenly distributed in terms of the other two measures.

Individual differences in the relationship between construct similarity and friendship are shown in Table 12.8. None of the comparisons between friends and nominal pairings is significant and only in one case (CC) does the t-value of the complex subjects exceed that of the cognitively simple subjects.

The picture was very similar when the extremity of ratings is considered. Only the ratings on friends' constructs and on constructs from the randomly drawn grids were compared. In no case did this comparison reach significance and in all three cases there was a slight tendency for the results to be in the opposite direction to that predicted with simple subjects showing a greater tendency to support the original hypothesis than did complex subjects. (see Table 12.9).

Table 12.8. Mean Number of Constructs shared by friends and
nominal pairs according to the level of cognitive
complexity of the subjects

		N	Friends	Nominal Pairs	t
CC	Simple	9	1.442	1.303	0.908
	Complex	9	1.674	1.303	1.148
CC%	Simple	9	1.556	1.234	1.177
	Complex	9	1.561	1.372	0.799
RC%	Simple	10	1.509	1.237	1.778
	Complex	10	1.500	1.353	0.419

Table 12.9. Mean Extremity Ratings on different sets of constructs
of subjects of different levels of cognitive complexity

		N	Friends Grids	Other Grids	t
CC	Simple	9	2.503	2.465	0.755
	Complex	9	2.554	2.600	-0.492
CC%	Simple	9	2.563	2.539	0.428
	Complex	9	2.454	2.486	-0.367
RC%	Simple	10	2.437	2.338	0.165
	Complex	10	2.520	2.553	-0.886

Summary of Results

In this study no relationship between similarity of values and friendship, or between similarity of construct content and friendship, has been found. This was the case when similarity was measured after six months acquaintance and when sociometric choices were obtained after both six and eighteen months acquaintance. While the results concerning similarity of personal construct organisation (or 'cognitive complexity') were similar, some sex differences did emerge at six months. These indicated that male friends were more similar than nominal pairs of males in terms of their scores on two of the measures involved (CC and CC%) while females chose as friends males who were less similar to them than other males in terms of their CC score. The reliability of these findings was questioned due to the low number of subjects involved. At eighteen months acquaintance no significant sex differences were obtained but it was found that there was a significant overall trend for similarity of CC at six months to be related to later friendship choices. This was not the case with similarity assessed using the other two measures of construct organisation.

No support was obtained for a further hypothesis relating extremity of rating to friendships. Subjects did not make more extreme ratings on their friends' constructs than on the constructs of others and, somewhat against the grain of previous findings, males did not make more extreme ratings on their own constructs than on others. The female subjects did make more extreme ratings on their own constructs. A further sex difference arose when the similarity of the others' constructs to the subjects own were considered: females made more extreme ratings on the similar constructs of their friends but did not make more extreme ratings on the similar constructs of others. For males the reverse was the case though very few subjects were involved.

The final section of the results considered individual differences in

cognitive complexity. There was found to be no effect of such differences on either the relationship between friendship and similarity of personal construct content, or that between friendship and extremity of rating.

CHAPTER THIRTEEN

Discussion and Further Analysis of Study 1.

The present study has not provided support for the general proposal that similarity is related to friendship. Given the great number of studies which have demonstrated such a link it is necessary to discuss possible reasons for its non emergence in this study. There are a number of possibilities. Firstly, it could be that inappropriate types of similarity were assessed since it is never suggested that friends are similar in all respects. This is of course possible since it was the aim of the study to investigate relationships which cannot be said to be clearly established despite some positive findings in previous studies. However before this possibility is accepted others must be considered.

A second possibility, in the light of Duck's filter model, is that either or both friendship choices and similarity measures were obtained at inappropriate times in the development of the relationships. This seems untenable, however, given that Duck has obtained positive findings linking personal construct similarity and friendship after six months acquaintance, as well as after longer acquaintance, and that the inclusion of values, and construct organisation similarity should, theoretically, deal with any slowness or acceleration of relationship development in the group studied.

Two further possibilities are tied to the obvious but important point that similarity is relative rather than absolute, and that therefore the nature of the comparison (i.e. nominal) group is of utmost importance. The method used here depends upon two important assumptions: firstly, that unreciprocated friendship choices do not indicate an established

friendship and that therefore no differentiation need be made between pairs in which an unreciprocated choice has been made and one in which no choice has been made; and secondly, that the group, as a whole, has had an opportunity to get to know one another equally well and that friends are 'selected' from the whole group.

The first assumption is probably even more apt in this study where 'friends within the psychology group' were required, than in Duck's studies where names of 'friends in (e.g.) Sheffield' were usually required. Presumably the restriction to within the group would lead to a less strict criterion as to what constitutes a friendship, thus unreciprocated choices would generally indicate a very superficial relationship.¹ A number of analyses which included unreciprocated choices as indications of friendship were performed but are not reported here since the effect of this change was slight.²

The second assumption is rather different in kind. For theoretical reasons it assumes the existence of a situation which cannot exist. The problem facing the researcher is how far does the group go towards meeting this perfect criterion i.e. what situational factors operates to prevent any particular group members from getting to know one another and hence becoming friends? The effect, for example, of propinquity has been well established (e.g. Festinger et al 1950). Thus in the present sample such factors as whether the students lived in a hall of residence or not, whether they were new to London or already had friends in the city, whether

¹ It was not considered that this difference would greatly alter the results obtained however since Duck (1975b, experiment A) has used this particular restriction and still obtained positive results.

² Lea (1979) has recently published evidence that pairs in which an unreciprocated choice has been made are more similar in terms of personal construct content than are pairs in which no choice has been made. However this finding awaits replication.

they were married or single, would tend to have an effect on their sociometric choices. Without full biographical data the identification of the 'correct' nominal group for each subject is impossible. However, since it was felt that extraneous factors such as place of residence, age etc. were affecting the results of this study, an attempt was made to improve the appropriateness of the nominal group by identifying sociometric groupings and assuming that within each of these groups each individual has had greater opportunity to get to know other members of that group than subjects who were not part of that group. This analysis will be described below.

One possible source of the failure to obtain a positive relationship between friendship and personal construct content is that no distinction was made between 'literal' similarity and 'conceptual' similarity. It may be that after six months acquaintance relationships had not developed beyond the stage at which the concern is with literal similarity. If this was the case, though, a concern with similarity at the conceptual level should have been manifesting itself after a further twelve months. However, literal similarity should have been assessed and this will be rectified in the next study.

That similarity of CC was significantly associated with friendship choices at eighteen months was surprising given that all other predicted relationships were non-significant. As a single finding it fits with Duck's model which has similarity of construct organisation becoming important at a relatively late stage of relationship development, but when looked at in the context of the other results its validity appears questionable especially since the low correlations between the three measures of cognitive complexity suggest that the validity of the measures themselves is suspect. If the finding is valid, however, Duck's emphasis on personal construct content would appear unfounded.

The hypothesis which predicted a relationship between friendship and the meaningfulness of the other's constructs fared as badly as those concerned with similarity. An interesting sex difference emerged such that males did not make more extreme ratings on their own constructs than on other subjects' constructs; female subjects did. One possible explanation for this effect may have been that whereas female subjects received only constructs from other females, male subjects were usually presented with constructs from both sexes. It was thought that perhaps the male subjects were finding the constructs of females, the 'interpersonal' specialists (cf. Little 1968), especially meaningful. However when male subjects ratings on their own constructs were compared with their ratings on the constructs of other males only the difference was slight and in the non-predicted direction (means = 1.986 and 2.028 for self and other constructs respectively: $t = -0.519$, 5 d.f., n.s.). Thus the difference between the sexes cannot be explained away in this fashion. It may be that different kinds of constructs are being produced by the two sexes with those of the females allowing for more subtle distinctions to be made. This suggestion cannot be tested here since a full content analysis was not undertaken though it is perhaps worth noting that in the content analysis that was carried out more of the females' constructs (14.6%) than of the males' (6.5%) could not be classified as either Psychological, Role or Interaction constructs, thus suggesting that the females' constructs may have been slightly less straightforward than those of the males. (The difference was not quite significant, $t = 2.024$, 23 d.f., $p > .05$). X

That no significant individual differences in terms of cognitive complexity emerged was not unexpected given the tentative way in which the predictions were made. The impossibility of adequately describing the organisation of a construct system in terms of one figure is demonstrated by the difficulty involved in making clear predictions in this area.

Further discussion will follow further analysis of the data in terms of sociometric groupings.

Sociometric Group Analysis

As described above the main purpose of this further analysis is to attempt to identify more accurately the appropriate nominal group for each subject. A very simple procedure was adopted. A sociogram was drawn for each of the two years data and a separate sociometric grouping was defined as one in which all its members had at least one reciprocated choice with another member of the group, and in which no group member had a reciprocated choice with any member of a different group. Other criteria could have been adopted but it was felt that this procedure would lead to the clearest distinction being made between different groupings.

After six months acquaintance two distinct groups emerged from this procedure. The first group (A) consists of seven people (four females and three males), five of whom all have reciprocated choices with each other. The second group (B) is larger, consisting of nine females and four males, and is less cohesive in that subgroups can be identified within its structure. Of the two subjects who were not involved in any reciprocated choices one has been allocated to group B since he received five choices from that group and only one from group A. The other was dropped from the analysis since his two choices were distributed between the groups. Only two unreciprocated choices were made from group A to group B, both by the same person, while nine such choices were made from group B to group A - however these were made by only three subjects.

The sociometric structure of the group did not change greatly over the next 12 months; the same two sub-groups could be identified. However, and certainly due partly to the different sociometric questions asked, the two groups were now linked by three reciprocated choices. If only

reciprocated 'close friend' choices were included in the sociogram separate sub-groups were produced but too few subjects were involved for any analysis to take place. It was therefore decided that, since the same criteria for the existence of sociometric groupings could not be used for the two sociograms, further analysis would be performed only on data collected after six months acquaintance.

Between-Group Analysis

Before embarking on an analysis of friendship choices within the two groups, A and B, possible differences between the groups were investigated on the grounds that the **dyad** may not be the only appropriate unit of analysis in friendship formation, since one may like the group one 'belongs' to without necessarily forming a friendship with each individual member. While this was meant to be an investigation of how the groups differed in terms of their values, constructs and construct organisation it soon became clear that the most obvious way in which the groups differed was in terms of age; group A consisted mainly of mature students¹ while group B contained no mature students. The existence of such an age difference should be borne in mind when other differences between the groups are described.

In order to investigate group similarities and differences the same procedure as had been used before was adopted, i.e. friends were compared with nominal pairs, but here a subjects 'friends' were defined as all other members of his sociometric group, thus leaving the members of the other

¹ Only one subject in this group was not older than all the members of group B.

group as his comparison subjects. This procedure was adopted in respect of measures of similarity of values, construct content and construct organisation.

Values: The analysis was performed using the matrix of squared rank correlations used in previous analyses. Subjects turned out to be less similar to their own group members than to the members of the other group (mean $\rho^2 = .0.273$ and 0.540 , $t = 2.09$, 19 d.f., $p = 0.05$). This difference was due mainly to group A members who were less similar to their own group than they were to group B members (mean $\rho^2 = 0.222$ and 0.350 , $t = 3.33$, 6 d.f., $p < .02$). For group B the difference was not significant (mean ρ^2 : group B = 0.301 , group A = 0.354 , $t = 0.780$, 12 d.f., n.s.).

Construct Content: Two main analyses could be performed here: the first taking all constructs into account, the second being restricted to psychological constructs only. As can be seen in Table 13.1 the tendency is for subjects to be more similar to their own group than to out-group members. This is the same both when all constructs are considered ($t = 4.747$, 19 d.f., $p < .001$) and, to a lesser extent, when only psychological constructs are considered ($t = 2.569$, 19 d.f. $p < .02$).

The two groups differ in the extent to which they contribute to these differences. Group A members are not significantly more similar to other group A members than to group B members when all constructs are considered ($t = 1.377$, 6 d.f., n.s.) but are in terms of psychological constructs only ($t = 4.556$, 6 d.f., $p < .01$). The reverse is true for group B i.e. the difference in similarity is not significant when only psychological constructs are involved ($t = 1.255$, 12 d.f., n.s.) but is when all constructs are considered ($t = 5.402$, 12 d.f., $p < .001$).

Table 13.1. Mean Number of Constructs shared with members of own group, and members of the other group.

		N	IN-GROUP	OUT-GROUP	t
All Constructs	Group A	7	1.286	1.033	1.377
	Group B	13	1.712	1.077	5.402 ***
	Group A and Group B	20	1.563	1.062	4.747 ***
Psychological Constructs	Group A	7	0.905	0.593	4.556 **
	Group B	13	0.731	0.593	1.235
	Group A and Group B	20	0.792	0.593	2.569 *

* p < .02; ** p < .01; *** p < .001.

A partial explanation for this finding lies in the fact that group A members produced more psychological constructs than group B members. The difference between the groups in this respect is not significant (group A members produced a mean of 8.14 psychological constructs and group B members a mean of 7.15 such constructs, giving $t = 1.037$, 18 d.f., n.s.) but is enough to deflate the number of psychological constructs group B members share with other group B members relative to the number they share with group A members. However even with this controlled for there is still a difference between the groups¹. It seems therefore that there is

¹ In order to check this two ratio scores were calculated for each subject. These ratios were:

- (1) total number of psychological constructs shared with group A members
maximum possible number of psychological constructs which could be shared with group A members.
- (2) the same ratio with group B substituted for group A.

To derive the maximum possible number of shared psychological constructs between any pair of subjects simply involved noting which of the two had produced fewest psychological constructs. The number of such constructs produced by that subject was the maximum number of psychological constructs that these particular subjects could share.

(footnote continued over..)

a difference between the two groups in the constructs that they produced.

Construct Organisation: In order to make the present analysis directly comparable with those above a similar procedure was used and the results of this will be described below. However the data lent itself to a very straightforward comparison being made between the two groups on each of the three organisation measures. These comparisons were made but no significant differences between the two groups emerged. The means obtained were - CC : group A = 58.67, group B = 64.46 ($t = 1.49$, 17 d.f., n.s.); CC% : group A = 57.38, group B = 57.75 ($t = 0.07$, 17 d.f., n.s.) and RC% : group A = 46.96, group B = 40.43 ($t = 1.43$, 18 d.f., n.s.).

In the second analysis the similarity (i.e. difference) scores between each pair of subjects were taken and scores calculated for each subject indicating the degree of similarity between that subject and other members of his group, and that between the subject and members of the other group. The results of this analysis are shown in Table 13.2.

Significant differences emerge in that there is a tendency for group B members to be less similar to each other than they are to group A members in terms of CC% ($D = 13.294$ and 11.082 respectively, $t = 8.171$, 12 d.f., $p < .001$), but more similar in this respect when RC% is the measure involved ($D = 8.589$ and 12.185 , $t = 3.293$, 12 d.f., $p < .01$). The significant

(footnote continued) ..

Using ratios rather than absolute figures led to a decrease in the significance of the difference between in-group and out-group for Group A members ($t = 3.627$, 6 d.f., $p < .01$) and an increase in this difference for group B ($t = 2.118$, 12 d.f., $p < .05$), showing that part of the difference between the two groups was due to the effect of the greater number of psychological constructs produced by group A, but also confirming that there must be a qualitative difference between the psychological constructs produced by the two groups.

Table 13.2: Mean differences in degree of construct organisation
between members of the same sociometric group and members
of the other group.

		Both Groups (N = 19)	Group A (N = 6)	Group B (N = 13)
CC	IN-GROUP	9.435	10.933	8.744
	OUT-GROUP	10.154	10.154	10.154
CC%	IN-GROUP	12.341 *	10.275	13.294 ***
	OUT-GROUP	11.082 *	11.082	11.082 ***
RC%	IN-GROUP	10.772 ²	14.825 ¹	8.589 *
	OUT-GROUP	12.185 ²	12.185 ¹	12.185 *

* $p < .01$; *** $p < .001$ ¹ N = 7; ² N = 20 .

result obtained with both groups combined for CC% is due to group B only, since the means are in the opposite direction when Group A only is considered.

Since the two groups do not differ in their mean scores in CC% and RC%, the above findings suggest that group B will display greater variation in CC% and less variation in RC% than group A. This was the case but the differences in variability were not significant. The standard deviations for CC% were: group A = 8.78, group B = 11.230 giving $F = 1.60$, (d.f. = 12, 5, n.s.), and for RC% : group A = 12.127, group B = 8.294 giving $F = 2.138$, (d.f. = 6, 12, n.s.). The differences obtained between the two different kinds of analysis suggests that **that involving** similarity scores between subjects is not as conservative as that which involves direct comparison between groups.¹ However the former procedure

¹ This is due largely to the non-independence of the data. The point is dealt with in more detail in Chapter 16.

has the advantage that it gives results directly comparable to others previously obtained.

That different results were obtained with each of the three measures indicates once again that the measures do not straightforwardly reflect the same aspects of an individual's construct system.

Discussion of Between-Groups Analysis

Had not the two groups identified differed so markedly in their age, and, to a lesser extent, in the proportion of males, the above findings could, more easily, have been related to friendship, and to the usefulness of a group level approach. The most parsimonious explanation for the existence of the two groups would seem to be that mature students form an easily identifiable and 'different' sub-group in the usual university context and that it is the similar position in which they find themselves which draws them together. Similarity of construing would be expected to be important here, and these results do indicate clearly that the two groups produced different constructs, but age itself would appear to be the best predictor of friendship in this case.

Given this background it is worth noting that it was construct content rather than values or construct organisation which successfully discriminated between the two groups. There were some differences in the variability of the scores of the two groups in these latter measures, but the results go some way towards redressing the failure of construct content to discriminate between friends and nominal pairs. It appears that similarity of construct content, as assessed here, can be used successfully to discriminate meaningfully between groups. Thus the failure of the previous analysis does not lie in the way in which similarity was assessed; it may lie in the choice of nominal group and this will be tested in the next section. The results obtained so far however do not suggest that

friends will be more similar in terms of construct content than other pairs within the same sociometric group.

Within-Group Analysis

The basis of this analysis is the argument, presented earlier, that 'nominal' pairs of subjects should be those who have had the opportunity of getting to know one another but have not formed a friendship. The assumption here is that subjects within any sociometric grouping have had more of an opportunity to get to know one another than they have individuals in a different sociometric grouping. The age difference between the groups probably favours this assumption since it seems likely that age would act as an early 'filter' in the development of a relationship. The analysis to be reported below then involves as nominal pairs only individuals within the same sociometric group; the same is, of course, true also of friendship pairs.

Values

There was a consistent tendency for friendship pairs to be less similar than within group nominal pairs. This finding held overall (friendship mean = 0.745; nominal mean = 0.791; $t = 1.707$, 18 d.f., n.s.) and for both groups separately (group A: friendship mean = 0.469; nominal mean = 0.587, $t = 1.789$, 6 d.f., n.s. and group B: friendship mean = 0.906; nominal mean = 0.910, $t = 0.475$, 11 d.f., n.s.). None of these differences reach significance, however, though there is a slight difference between the groups with Group A displaying the tendency to a greater extent. It is also worth noting the lower means obtained within group A indicating the greater range of values, previously noted, within that group.

These results are consistent with the previous analyses involving value similarity. In all three cases there has been a tendency for less similarity to be associated with friendship, though only the between-groups analysis approached significance, thus indicating clearly that, at least after six months acquaintance, value similarity is not a feature of friendship within this group.

Construct Content

Friendship pairs and within-group nominal pairs were compared in respect of construct content over all constructs and over psychological constructs only, with the results presented in Table 13.3. None of the differences are significant but in all cases friendship pairs are less

Table 13.3: Differences in similarity of construct content between friendship and nominal pairs when all pairs consist of individuals from the same sociometric group.

All Constructs			Friends	Nominal Pairs	t
	N				
Group A	7		1.131	1.655	-1.576
Group B	12		1.740	1.798	-0.228
Groups A and B	19		1.516	1.745	-1.150
Psychological Constructs					
Group A	7		0.874	1.250	-1.519
Group B	12		0.714	0.792	-0.475
Groups A and B	19		0.775	0.961	-1.279

similar than nominal pairs. When sex differences were considered only for females choosing males was this pattern not obtained, but again none of the comparisons reach significance (Table 13.4). For the case of females choosing females the parametric t-test did not indicate a significant difference but using the non-parametric sign test gave $p = 0.038$ for ten of the 12 subjects involved were less similar to their friends than to the other females in their group when all the constructs were considered.

Table 13.4: Within-group differences in construct content
similarity as a function of sex of chooser and of
chosen (sex of chooser given first).

All Constructs

	N	Friends	Nominal Pairs	t
M-M	2	1.000	1.500	-
M-F	6	1.000	1.292	-1.180
F-M	4	1.625	1.417	0.288
F-F	12	1.829	2.293	-1.464

Psychological Constructs

M-M	2	0.000	1.000	-
M-F	6	0.555	0.696	-1.963
F-M	4	0.750	0.583	0.365
F-F	12	0.872	1.174	-1.258

Thus apart from the finding that the two sociometric groups differed in terms of their personal constructs, this study has produced no evidence for the existence of a relationship between construct similarity and friendship. Indeed there was a slight tendency for friendship to be

associated with relative dissimilarity as nominal pairs became more similar in other respects (i.e. age and sociometric group).

Construct Organisation

The results for construct organisation, presented in Table 13.5 differed according to the measure involved. Thus there was a significant tendency, due mainly to Group B, for friends to be less similar than nominal pairs in terms of CC ($t = 2.462$, 17 d.f., $p < .05$), but a significant tendency, due mainly to Group A, for friends to be more similar in terms of CC% than nominal pairs ($t = 2.893$, 17 d.f., $p < .02$). No significant differences emerged with RC% as the measure, though the overall trend was for greater similarity between nominal pairs than between friends.

Sex differences were investigated but little of interest emerged. The only significant difference obtained was that female friends were less similar to each other in terms of CC than female nominal pairs ($t = 2.435$, 11 d.f. $p < .05$) which backed up the finding in the main analysis. (Table 13.6).

Table 13.5. Within-Group Comparison between friends and nominal pairs of differences in degree of construct organisation

		Friends	Nominal Pairs	t
CC				
Group A	6	11.417	8.778	-1.056
Group B	12	10.773	8.243	-2.413 ^{**}
Groups A and B	18	10.987	8.421	-2.462 ^{**}
CC %				
Group A	6	7.316	16.719	7.621 ^{***}
Group B	12	11.264	12.970	1.000
Groups A and B	18	9.948	14.220	2.893 ^{***}
RC%				
Group A	7	15.555	15.673	0.034
Group B	12	13.046	8.084	-1.996
Groups A and B	19	13.970	10.880	-1.502

^{***} p < .001; ^{**} p < .02; ^{*} p < .05.

Table 13.6: Within-group comparison of friends and nominal pairs' degree of construct organisation as a function of sex of chooser and of chosen (sex of chooser given first).

	N	Friends	Nominal Pairs	t
CC				
M-M	2	3.000	6.000	
M-F	5	11.467	10.611	-0.475
F-M	4	10.500	9.542	-0.595
F-F	12	9.796	7.220	-2.435 *
CC%				
M-M	2	7.550	25.320	
M-F	5	12.686	14.437	0.359
F-M	4	16.521	12.821	-0.864
F-F	12	11.068	12.037	0.449
RC%				
M-M	2	13.14	2.730	
M-F	6	11.274	12.001	0.151
F-M	4	16.501	8.391	-1.639
F-F	12	9.790	11.452	1.237

* $p < .05$.

Discussion

Some interesting, but difficult to interpret, results have come from the sociometric group analysis. The difficulties in interpretation are due partly to the age difference between the two sociometric groupings and partly to the problem of specifying the order of filters within Duck's model; this being made particularly difficult by a number of findings which indicate a preference for dissimilarity rather than similarity.

Since the main aim of the study was to replicate Duck's findings of a positive relationship between personal construct similarity and friendship, it would seem that this aim had been achieved, in a roundabout way, in the between-group analysis in which it was found that the two groups differed clearly in the constructs they produced. However this finding becomes more difficult to interpret when viewed in the context of other findings; in particular when the age difference between the groups is considered. It may be that the differences in personal constructs were simply a result of common differences in the way older and younger people construe: in this case construct similarity would not be playing a functional part in the development of friendships, which would rather be the result of people of similar ages preferring to associate with one another. A different interpretation, in terms of Duck's model, is possible however. In early versions of the model (e.g. Duck 1973b) age would be seen as the basis of a filter through which potential friends must pass on their way to evaluation in terms of later filters based on, for example, construct similarity. Later versions (e.g. Duck 1977a) would suggest that age-similarity might be attractive because of its implications for the existence of, functionally more important, construct similarity. Thus in this model it might be accepted that people of different ages commonly

construe differently but these different constructions would be viewed as determinants of friendship selection and not just as correlates of it.

The data does not allow for a decision to be made in favour of either interpretation, but the within-group analysis did not provide results consistent with an emphasis on construct similarity. Rather, within the context of similarity identified by the between-group analysis, there was a slight, non-significant, tendency to prefer dissimilarity. Within the filter model this may be seen as relationship development having reached a stage where rough discriminations in terms of construct similarity can be made, but not having reached a stage where finer judgements can be made. Alternatively, and placing more stress on the slight preference for dissimilarity within groups, a desire for stimulating, but not threatening, exposure to moderately different ways of construing may be present (cf. Landfield 1971; McCarthy and Duck 1976). This latter interpretation would require some modification of the model; in particular it would be difficult to specify the stage at which such a desire might manifest itself.

This problem arises also with construct organisation which place within the order of filters is made more problematic by the results of this study. Within-group comparisons indicate that friends were more similar than nominal pairs in their CC% scores but less similar in CC; the former result being mainly due to group A and the latter to group B. These findings suggest that similarity of construct organisation can play a part in friendship formation at a relatively early stage of relationship development but that it is by no means clear exactly what that part is. The finding, reported earlier, that similarity of CC after six months acquaintance was significantly related to sociometric choices made a year later fitted in well with Duck's suggested sequence of filters which has

construct organisation as being important in later stages of relationship development. However the within-group preference for dissimilarity of CC after six months is reminiscent of Landfield's (1971) suggestion that differences in construct organisation have stimulation value.

Another problem is contained in the finding of within-group preferences for similarity of CC%. Apart from emphasising once again that CC and CC% are not alternative measures of the same construct this result suggests that, especially at the stage of relationship development reached by Group A members, a clear preference for similarity of some aspects of construct organisation is not associated with a clear preference for similarity of construct content. The model would seem to predict that this state of affairs could only exist if the stages of filtering in terms of personal construct content had been passed. However given that Duck (1973b experiment A) found construct similarity to be associated with friendship after four years acquaintance, and that the model also suggests that the stage of filtering in terms of construct similarity will be a long one, with concern gradually shifting towards finer details of the other's construct system, it seems unlikely that such a **progressed** stage could have been reached by the group. Rather more plausible interpretations would be that either similarity of construct content was not very important in this group, or that similarity of CC% was acting as a filter before filtering in terms of construct content had taken place. While it is the case that the first possibility receives support from the lack of a relationship between construct similarity at six months and friendship at 18 months the between groups analysis does not support it, and it may be that the timing of the study was not ideal for the detection of the effects of construct similarity. The second interpretation is less damaging to the filter model and requires only a slight resequencing of

filters to recognise the personality trait characteristics of cognitive complexity measures. It was argued in the introduction to this study that assessments of another's degree of construct organisation could only be made as his personal constructs became known, and that, therefore, similarity of cognitive organisation could not act as a filter before similarity of construct content. However this is a valid argument only when applied to the organisation of personal constructs; it does not apply to the organisation of supplied constructs which can be assessed before the elicitation of any personal constructs. Thus, of the three measures of construct organisation employed here, the argument is valid only for RC%. Similarity of CC% and CC could be judged before similarity of personal construct content and could, therefore, act earlier in the sequence of filters.

While some kind of conceptual distinction can be made between RC% and the two measures derived from the supplied grid, no such distinction can easily be made between CC% and CC. In so far as they are both supposed to be measuring the same thing then clearly one or both are invalid. It is possible that they are both validly assessing different aspects of the individual's organisation of the supplied constructs but without a means of identifying these aspects it is impossible to suggest how they might fit into the sequence of filters. The results of this study can be interpreted in favour of either of the two possible orderings.

Firstly, that similarity of CC acts as a filter later than similarity of CC% is indicated by the significant relationship between the former and friendship at 18 months, and between the latter and friendship at six months. The second interpretation rests upon a hypothesised difference between group A and group B in the stages of relationship development reached.

Whereas both groups differentiated themselves from the other group in terms of personal constructs, group A did so mainly in terms of psychological constructs, which, Duck suggests, is an indication of more developed relationships. If the groups were operating at different levels in this respect then it follows that since dissimilarity of CC was related to friendship at six months, mainly due to group B, dissimilarity of CC must act as a filter before similarity of CC%. Thus, taken together, these arguments suggest that dissimilarity of CC may be attractive at relatively early stages of relationships, but that similarity is more attractive later on. So, if the two measures are meaningful these findings indicate greater complexity in the sequencing of filters than has hitherto been suggested.

In conclusion, the sociometric group analysis has, it is thought, done much to illuminate the sociometric structure within the group under study and has provided hints that the relationship between similarity of construct content and organisation, and friendship may be even more complex than originally thought. At the very least the importance of 'non-psychological' factors, such as age, has been clearly brought out.

CHAPTER FOURTEEN

Study 2: A Further Investigation of the Relationships between
Similarity of Construct Content and Organisation and Friendship
in a Group of First Year Undergraduates

While producing some interesting results the last study was not ideal in terms of testing Duck's model. The existence of two different age groups within the group under study affected the results in ways which are accountable for within the terms of the model but which made any link between construct similarity and friendship difficult to detect and, when detected, difficult to interpret. Fortunately the intake of Psychology students at Bedford College the year following the group studied in the previous investigation contained only a few mature students, and it is this group which was tested in Study 2. (Given the existence of some differences between the two sociometric sub-groups identified in the previous study it was felt that age differences might exist in the bases of friendship choice. Accordingly a group of older students was chosen as the subjects of Study 3.)

The main aim of both these studies was to look again at the relationship between similarity of construct content and friendship. However similarity of construct organisation was also investigated in both studies. For a number of reasons a modified version of RC%, based on dichotomous rather than 5-point ratings, was used as the only measure of construct organisation in these studies. One reason for the limitation to one measure was the limited time available for data collection which made the completion of two grids by each subject impossible. It was considered important that a grid with elicited constructs be completed (c.f. Adams-Webber 1970a) particularly

since such low correlations between measures had been obtained in the first study suggesting the problems of viewing cognitive complexity as a unitary trait. Also in favour of the use of RC% was the argument, presented in the last chapter, that the placing of similarity/dissimilarity of CC and CC% in the proposed sequence of filters was conceptually a problem, while it was relatively straightforward to provide a rationale for the suggestion that similarity of RC% could act as a filter only after similarity of construct content. This is also the order proposed by Duck. The use of dichotomous, rather than 5-point, rating scales was prompted by the difficulties some subjects had reported in the previous study and also by the fact that Bender (1968) had used such a method in his similar study.

As in the previous study a group of first year Psychology students were tested after six months acquaintance. It was hypothesised that similarity of construct content would be related to friendship. It was also hypothesised that similarity of construct organisation would be related to friendship though this is a less subtle hypothesis than would be put forward if accurate assessment of the stage of relationship development reached was possible. The hypothesis is not entirely in line with the filter model which has similarity of construct organisation as playing only a minor part, and at a relatively advanced stage of friendship development. The possibility of viewing construct organisation as a trait suggests however, as argued previously, that no deep personality characteristic is involved here and so organisational similarity may be involved at earlier stages of friendship (c.f. Johnston and Centers 1973; Bender 1968).

Two methodological changes made for this study were, firstly, the use of a 'friendship questionnaire' to assess the closeness of particular

friendships and secondly, in the data analysis, the use of the 'literal' criterion of construct similarity. The friendship questionnaire, previously described in the last study in which it was used after 18 months acquaintance, was introduced partly to make sure that a clear distinction could be drawn, if felt necessary, between (close) friends and nominal pairs. The use of the literal criterion follows from Duck's (1973b) finding of its usefulness in early friendship.

Method

Subjects:

Of the first year Psychology intake at Bedford College 20 females and five males took part in the study. Seven of the group were not present and one female present did not complete the forms. One female (a mature student) did not give her age. Of the remaining 19 females 16 were aged between 18 and 20, while the other three were aged 42, 42 and 53. The mean age of the five males was 21.5 (range = 19 - 29; standard deviation = 4.27).

Procedure:

The data were collected, as before, during a practical class. Each subject was provided with a role title list, a rep grid form and a friendship questionnaire. The latter was stapled to the rep grid form at all four corners and subjects were asked not to look at it until the grid was completed. Subjects were told to write their name on the grid sheet but not on the friendship questionnaire: both of these forms had previously been numbered.

The instructions to subjects were as in the previous study for the elicitation of constructs. Completion of the grid was slightly different from the previous study as dichotomous ratings were required.

Subjects were instructed to indicate with a tick if the 'How Similar' description fitted or a cross if the 'How Different' description was applicable for a particular element. If neither description was appropriate they were to use 'N/A' for 'not-applicable'.

When subjects had produced 12 constructs, completed the grid and filled in the questionnaire they could leave the room if less than an hour had passed, which was the time allotted for testing. All but two subjects finished within the hour and these finished shortly afterwards.

Results

Sociometric Data:

Twenty five choices of close friends were made within the group of 25 subjects who completed grids: eighteen of these choices were reciprocated at the level of 'close friends' and only two were left unreciprocated when 'friends' were taken into consideration. Ignoring category, 126 choices were made within the group of which 78 were reciprocated. Twelve of the unreciprocated choices were made by one subject who named almost the entire group as a friend, and a high proportion of the other unreciprocated choices were the result of two relatively popular males who did not name any friends. Since one other male made no reciprocated choices only two males were involved in any kind of reciprocated choice; all females were. (Tables 14.1; 14.2).

A sociogram revealed the existence of two separate sociometric groupings on the basis of reciprocated choices. One of these groups consisted of the four mature female subjects (nos. 6, 9, 17, 19) while the other group consisted of all the other 18 subjects involved in reciprocated choices. Again the influence of age on friendship seems to be strong but on this occasion only a small number of older students are involved.

Table 14.1. Sociometric Matrix Showing 'Close' Friendship Choices after six months Acquaintance (Study 2).

S. no.	<u>CHOSEN</u>																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	-																								
2		-																							
3			-																						
4				-																					
5					-																				
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24																								-	
25																									-

Note: x = Reciprocated choice; / = Unreciprocated choice
a = Subject who left forms blank
b = Members of the group not present at testing.

Table 14.2. Sociometric Matrix Showing All Friendship Choices Made After Six Months Acquaintance (Study 2).

		CHOSEN																								
S. No.	CHOOSE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		-	x	x	-	x	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
1	F	-	x	x	-	x	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
2	F	-	-	x	-	x	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
3	F	-	x	-	x	-	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
4	F	-	x	-	x	-	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
5	F	-	x	-	x	-	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
6	F	-	x	-	x	-	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
7	F	-	x	-	x	-	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
8	F	-	x	-	x	-	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
9	F	-	x	-	x	-	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
10	F	-	x	-	x	-	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
11	F	-	x	-	x	-	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
12	F	-	x	-	x	-	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
13	F	-	x	-	x	-	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
14	F	-	x	-	x	-	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
15	F	-	x	-	x	-	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
16	F	-	x	-	x	-	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
17	F	-	x	-	x	-	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
18	F	-	x	-	x	-	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
19	F	-	x	-	x	-	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
20	F	-	x	-	x	-	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
21	F	-	x	-	x	-	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
22	F	-	x	-	x	-	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
23	F	-	x	-	x	-	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
24	F	-	x	-	x	-	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/
25	F	-	x	-	x	-	/	x	/	/	/	/	/	x	x	x	/	/	/	/	/	/	/	/	/	/

Note: x = Reciprocated choice; / = Unreciprocated choice
a = Subject who left forms blank
b = Members of the group not present at testing.

Construct Similarity:

As in the previous study three judges assessed construct similarity by comparing every construct of every subject with every construct of all the other subjects and noting down any instances in which the two constructs had the same or similar meaning. Reliability, as assessed by Kendall's W, was acceptable ($W = 0.575$, $p < .001$). In this study this 'conceptual' criterion of similarity was supplemented by the use of a stricter 'literal' criterion where two constructs were only counted as similar if the same or very similar wording had been used.

Constructs were also classified as being 'psychological' or not. Two thirds of the constructs were classified as psychological, which is very similar to the 65% figure obtained in the last study.

Each of the four similarity matrices derived from these procedures (All constructs: conceptual; all constructs: literal; psychological constructs: conceptual; psychological constructs: literal) was compared with the sociometric matrices. For each subject three scores were potentially derivable: indicating the mean number of constructs shared with her close friends, the mean number shared with her friends and the mean number shared with all other subjects. As before 'close friends' were those subjects who each named each other as a close friend, while 'friends' were those pairs involved in any other sort of reciprocated choice.

Of the 22 subjects who were involved in reciprocated choices, 15 had at least one close friend while 21 had at least one friend. The non-parametric trend test employed in the previous study was used to assess the relationship between friendship and construct similarity with the results shown in Table 14.3. The mean number of shared constructs in each category is shown but it should be noted that the trend test operates on ranks rather than means; the relevant rankings are also shown in the table.

Table 14.3. The relationship between degree of friendship and level of construct similarity using two different criteria of similarity.

	Literal		Conceptual	
	All Constructs	Psychological constructs only	All Constructs	Psychological constructs only
<u>Mean Ranks</u>				
Close friends (N = 15)	2.07	2.23	1.23	1.73
Friends (N = 21)	1.83	1.69	1.95	1.74
Nominal Pairs (N = 22)	1.75	1.77	2.21	2.07
S	-3 ^a	-5 ^a	26 ^b	16 ^c
<u>Mean Number of shared Constructs</u>				
Close Friends (N = 15)	0.533	0.400	2.133	1.600
Friends (N = 21)	0.201	0.195	1.097	0.934
Nominal Pairs (N = 22)	0.072	0.046	0.797	0.671

Note: a: $z < 1$, n.s.; b: $z = 3.33$, $p < .001$; c: $z = 2.07$, $p < .02$.

Two significant trends indicating a positive relationship between friendship and construct similarity emerged from the analysis. In both cases the conceptual criterion of similarity was being employed; using the literal criterion neither trend was significant and both were in fact, slightly negative. The use of the former criterion, however, revealed a strong tendency for similarity over all constructs to be associated with

friendship ($S = 26$, $z = 3.33$, $p < .001$) and a slightly weaker tendency when psychological constructs were considered ($S = 16$, $z = 2.07$, $p < .02$).

Making the not unreasonable assumption that, in the terms of Duck's model, close friends have passed through more filters than have friends leads to the prediction that the former will differ from nominal pairs in ways different from the ways in which friends differ from nominal pairs. Thus, for example, since, according to Duck (1973b), a concern with similarity of psychological construing occurs relatively late in the sequence of filters, and a concern with literal rather than conceptual similarity is found relatively early in the development of friendship it would be predicted that, in the extreme case, close friends would be differentiated from nominal pairs by their conceptual similarity of psychological construing while friends would not be so differentiated but rather by their literal similarity in more general construing. This aspect of the model was tested by comparing nominal pairs with close friends and with friends. A Wilcoxon^o matched pairs signed-ranks test was used here since a t-test would have been inappropriate for the comparisons involving literal similarity because of the highly skewed nature of the data (due to the large number of zeros; evidence for the non-normal distribution here is shown in Table 14.3 where, for literal similarity only, the mean number of constructs shared by close friends, friends and nominal pairs is not reflected in the mean ranks assigned to each of these).

In both cases involving literal similarity close friends are less similar than nominal pairs. The differences are not significant however (all constructs: $T = 28$, $N = 11$; psychological constructs $T = 17$, $N = 9$). Friends are slightly more similar than nominal pairs when only psychological constructs are considered ($T = 20$, $N = 13$, $p < .10$) but less similar when all constructs are involved ($T = 44$, $N = 16$, n.s.). The data does not provide

strong support for the prediction that literal similarity would be the concern of friends rather than close friends though close friends do exhibit less literal similarity than either friends or nominal pairs and there is the weak tendency noted above for friends to produce more literally similar psychological constructs than nominal pairs. It would obviously be a mistake to place much weight on these findings.

With conceptual similarity as the criterion close friends are significantly more similar than nominal pairs when all constructs are considered ($T = 5$, $N = 15$, $p < .01$) and in fact are more similar than friends ($T = 8$, $N = 13$, $p < .01$). Friends are not, however, significantly more similar than nominal pairs ($T = 68.5$, $N = 20$, n.s.). The position is rather different when psychological constructs only are considered: here friends are significantly more similar than nominal pairs ($T = 45.5$, $N = 19$, $p < .05$) but close friends are not ($T = 23$, $N = 14$, $p < .10$). Close friends were more similar than friends but not significantly so ($T = 13$, $N = 11$, $p < .10$) indicating that the significant difference obtained between the latter and nominal pairs was due to the greater number of subjects involved in this comparison than in that between close friends and nominal pairs.

The difference here between the case in which all constructs were involved and that in which only psychological constructs were considered is not in line with prediction. It was argued above that close friends should have manifested greater sensitivity to the change in types of constructs considered, yet it seems to have been friends who have done so. While in both cases in which the conceptual criterion was involved the rank order of pairs in terms of similarity was close friends, friends and nominal pairs, the introduction of the restriction to psychological constructs led to friends becoming relatively less similar to nominal pairs; close friends, on the other hand, became more similar to both.

This can be seen clearly in the mean rankings shown in Table 14.3.

Because of the low numbers involved no 'between-group' analyses were performed nor were sex differences investigated in this study. Further analyses were performed, though, which looked at all-female friendships within the larger of the two sociometric groupings. This means, in effect, that only female subjects who were aged between 18 and 20 were involved; in this way it was hoped to minimise the effects of age and sex differences in construing and to consider the relationship between friendship and construct similarity within a more homogeneous group.

The mean rankings of similarity for close friends, friends and nominal pairs in this group along with the results of the trend test are shown in Table 14.4. Only one of the trends reached significance: that involving conceptual similarity over all constructs ($S = 21$, $z = 3.00$, $p < .005$). The significant trend obtained in the previous analysis between friendship and conceptual similarity of psychological construing was not repeated ($S = 5$, $z < 1$, n.s.). and neither was the tendency for friends to be relatively more sensitive to the restriction to psychological construing than close friends. Indeed, as the mean rankings show, friends show a tendency to become less similar than nominal pairs when this restriction is made. As before neither trend involving the literal criterion was at all significant. Wilcoxon tests were again performed but only in the case of conceptual similarity of all constructs did any significant findings emerge: close friends being more similar than both friends ($T = 7$, $N = 11$, $p = .02$) and nominal pairs ($T = 5$, $N = 13$, $p < .01$), but the difference between these two was not significant ($T = 33$, $N = 13$, n.s.). In no other case, as might have been expected from the trends, was even a minimally significant difference obtained.

Table 14.4. Mean rankings of similarity of construct similarity of close friends, friends and nominal pairs within the sub-group of females aged 18 - 20.

		Literal		Conceptual	
		All Constructs	Psychological Constructs	All Constructs	Psychological Constructs
<u>Mean Ranks</u>					
Close Friends	N 13	1.81	2.00	1.23	1.77
Friends	14	1.89	1.79	2.11	2
Nominal Pairs	16	1.94	1.88	2.22	1.88
S	2		0	21 ^a	5

Note: a: $z = 3.00$, $p < .005$.

Construct Organisation

As in the previous study each subject's grid was submitted to INGRID and the percentage of variance accounted for by the first principal component was taken as the measure of construct organisation. A matrix of absolute differences between every pair of subjects was constructed and compared with the sociometric matrices. The similarity hypothesis predicts smaller differences in score between close friends than between friends and between friends and nominal pairs. Evidence for the existence of an association between similarity and friendship was obtained when all subjects were involved ($S = 16$, $z = 1.95$, $p < .06$) and, more strongly, when only the younger females were considered ($S = 18$, $z = 2.52$, $p < .02$).

Table 14.5: Mean absolute differences in degree of construct organisation and the trend for similarity to be associated with friendship, for all subjects and for the sub-group of females aged 18 - 20.

<u>All Subjects</u>	N	Mean Differences in Organisation Score.	Mean Rank of Differences
Close Friends	15	9.06	1.67
Friends	21	11.07	1.67
Nominal Pairs	22	11.70	2.18
S			16 ^a
<u>Females Only (18 - 20)</u>			
Close Friends	13	8.78	1.38
Friends	14	13.78	1.93
Nominal Pairs	16	12.79	2.25
S			18 ^b

Notes: a: $z = 1.95$, $p < .06$; b: $z = 2.52$, $p < .02$.

The use of t-tests did not reveal any significant differences when close friends, friends and nominal pairs were compared. This was true for all subjects (close friends vs. nominal pairs: means = 9.06 and 12.15 respectively, $t = 1.27$, 14 d.f., n.s.; Friends vs. nominal pairs: means = 10.36 and 11.26 respectively, $t = 0.42$, 20 d.f., n.s.; close friends vs. friends, means = 9.32 and 12.34, $t = 0.71$, 13 d.f., n.s.) and when only the younger females were involved (close friends vs. nominal pairs, means = 8.78 and 13.05, $t = 1.45$, 12 d.f., n.s.; friends vs. nominal pairs,

means = 13.78 and 12.31, $t = 0.47$, 13 d.f., n.s.; close friends vs. friends means = 9.34 and 15.78, $t = 1.28$, 10 d.f., n.s.). The difference in the results obtained using the trend test and t -tests is due mainly to two subjects who obtained very different organisation scores from those obtained by their close friends: this was not enough to hide the overall trend but was enough to affect the parametric test.

Discussion

Strong support has been obtained here for the hypothesis that friendship is associated with construct similarity. This was the case within the group as a whole and also within the more restricted range of younger female subjects. Within the whole group similarity of psychological construing was also significantly related to friendship but this was not the case within the smaller sample. In contrast to this, similarity of construct organisation was found to be related to friendship within the group of younger females, but this relationship was only marginally significant within the group as a whole.

The question immediately arises: why has this study provided clear support for the similarity hypothesis when the first study failed to? There were three, possibly relevant, methodological differences between the studies. Firstly, in this study the sociometric data was collected on the same occasion as the grid was completed while, in the first study, the Easter vacation intervened. Secondly, the present study allowed subjects to differentiate between close friends and friends which was not the case, at least after six months acquaintance, in the first study. The third difference between the studies is more restricted in its potential effects and concerns the use of dichotomous rather than 5-point rating scales in the grid.

It is thought unlikely that the first of these will have made any great difference to the results. The sociometric structure of the group in the first study did not change greatly over the year of the study and it seems unlikely therefore that any appreciable change would have taken place over a short vacation.

The change in the procedure for the collection of sociometric data is more likely to have had some effect either because of subjects using different criteria for 'friendship' in response to the different questions asked, or because the trend tests used in conjunction with the friendship questionnaire produced different results than would be produced by a test which did take into account the magnitudes of the differences in similarity between nominal and other pairs. It is impossible to know, from the data available, what criteria were being used to differentiate friends from non-friends, but one possible effect of the use of the friendship questionnaire in this respect seems to be ruled out by data from Study 1. It might have been expected that allowing subjects to differentiate between levels of friendship would lead to somewhat 'loosened' criteria of friendship; however, as previously reported, there was only a very slight increase in the number of sociometric choices made in the first study after 18 months acquaintance when the friendship questionnaire was used over the number made after six months acquaintance when it was not. This suggests that allowing subjects to distinguish close friends from friends has not led to a dilution of the criteria for friendship and that, by implication, the use of this procedure is not a major determinant of the different results obtained in the two studies.

It is relatively straightforward to demonstrate that the change in statistical test has had some effect on the results obtained in Study 2. A significant trend was found within the group of younger females indicating that friendship was associated with similarity of construct organisation.

That the use of *t*-tests showed no significant differences between close friends, friends and nominal pairs is not too much of a problem for this kind of finding is to be expected when a trend test, of any sort, is employed. However a comparison was made between close friends and friends combined and nominal pairs. This analysis, essentially similar to that used in the last study at six months acquaintance, produced a non-significant result (mean differences: all friends = 10.23, nominal pairs = 12.60, $t = 1.209$, 15 d.f., n.s.). This difference in result is due to the general tendency for the trend test to be less affected by a few subjects who deviate markedly from the general trend. In other comparisons the trend test and a *t*-test comparing all friends and nominal pairs produced very similar results (e.g. the significant trend for conceptual similarity of all constructs is reflected in the results of the *t*-test: friendship mean = 1.242, nominal mean = 0.795, $t = 3.138$, 21 d.f., $p < .01$), and, in general, the use of a different statistical test cannot explain the marked differences between the results of the two studies. The main advantage of the trend test is that it allows for the retention in the analysis of each subject's distinction between close friends and friends.

The use of dichotomous rather than 5-point rating scales in the grid was adopted in the second study because this has been the method used most often in the literature. The effects of this change are difficult to determine. One possibility is that the use of a mid-point to indicate neutrality as well as non-applicability may have led to a restricted range of scores in which individual differences did not fully emerge. However a comparison of the RC% scores of the younger female subjects in the two studies reveals no real difference in variation (Study 1 ($N = 13$): mean = 40.43, s.d. = 9.51; Study 2 ($N = 16$): mean = 36.23, s.d. = 11.59).

While the methodological differences between the two studies may partly account for some of the differences in the results obtained the major explanation of these differences must lie in the groups studied. Both groups consisted of first year students of the same subject at the same university but despite these similarities may of course have differed in many unknown respects. The two most obvious differences between the groups were the proportion of mature students and of males within each. The group in Study 1 contained proportionately more of both (this is the case whether or not group members who did not take part in the studies are included).

That it should be the group containing mostly females who supported the similarity hypothesis fits in, to an extent, with Duck's (1973a, b) findings of sex differences in which female friendships were more strongly characterised by similarity than were male friendships. However the existence of sex differences in this respect is not enough to explain the lack of a relationship between similarity and friendship among the female subjects of Study 1. Duck's findings of sex differences were obtained, obviously, within a group of mixed sex not, in this respect, unlike that studied in the first investigation.

Age, then, may be a more powerful factor. There may be differences in the bases of the friendship choices of younger and older adults, such that for example, the age-related changes noted by Duck (1975b) do not stop at young adulthood but continue such that older people are concerned with deeper aspects of others' construing. Alternatively older adults, having achieved a relatively stable identity, may be less concerned with the validation of construing available from similar others. Neither of these possibilities is enough to explain the findings of Study 1, however, in which the mature students clustered together on the 'superficial' basis of age and the younger students gave no indication of preferring construct similarity.

Rather than the different results of Studies 1 and 2 being the product of straightforward age and sex differences in the bases of friendship choice, it may be that it is the differing contexts within which the members of the two groups formed their friendships which can best account for these different results. Mature students are even more unrepresentative of their age group than younger students are of theirs, and their position within the University is one that tends to produce anxiety and is threatening for many. In this situation, one evidenced, for example, by the formation of mature students groups and by the lack of confidence in their academic ability displayed by many mature students, it may be that people who are going through similar experiences (i.e. other mature students) will be sought out, regardless of their similarity in other respects, in the hope that useful new constructions will be developed and important old ones retained. This tendency may be reinforced by younger students being rather wary of their older colleagues. Once such coalitions of mature students are formed close friendships do emerge. These may be based on both breadth and depth of similarity but the initially narrow, but intensively explored, focus of mature students interactions may, along with their potentially greater number of social ties outside the university, mean that friendship formation proceeds rather differently than in a group of younger students. The findings of Study 1 suggest that the presence of mature students in any number affects friendship development among the younger students though it is difficult to suggest how this might occur. Perhaps the presence of relatively high dissimilarity within the group makes more salient the possibility of alternative constructions and also makes clearer, as figure against ground, each individuals identity; in such circumstances the need for validation might be less and the desire for 'stimulation' greater thus leading to a preference for moderate, rather than high, similarity. In

a more homogeneous group high similarity may be preferred for its part in the establishment and validation of a more definite identity.

Obviously such speculations cannot be backed up by any data so far obtained. However it is considered important to stress that the results of the two studies completed so far do suggest that in different contexts, and for different people, the development of friendship may not take the same form for different concerns may be salient. While there may be common sex and age differences the manifestation of these will be affected by the circumstances in which individuals find themselves.

More central to the studies reported here, however, is consideration of the kinds of similarity of construing which are associated with friendship and their order in the sequence of filters. While no non-longitudinal study can entirely adequately deal with this latter issue some relevant data may be extracted from the results of Study 2. Firstly, literal similarity was found not to be associated with friendship while conceptual similarity was; this suggests (Duck and Spencer 1972) that relationships within the group were fairly well established. However the number of constructs judged to be literally similar was very low and this may have prevented any relationship emerging. The relationship obtained between similarity of psychological construing and friendship was weaker than that between more general construct similarity and friendship, and, indeed, was non-significant within the young all-female group. This suggests that while filtering in terms of construct similarity was well established, only fairly gross filtering in terms of similarity of psychological construing had taken place and the more fine-grained filtering required within the sub-group of young females had not begun. These results all fit in well with Duck's findings. A problem emerges, however, when the position of similarity of construct organisation is considered. The results within

the female group suggest that, since such similarity is significantly related to friendship, filtering of similarity of psychological construing may not occur until after filtering in terms of similarity of construct organisation. Although this finding is not repeated when the group as a whole is considered the implication is that similarity of construct organisation may not be as difficult to perceive, or figure so late in the filter sequence, as has been suggested.

CHAPTER FIFTEEN

Study 3: Friendship and Similarity in a group of older
part-time students

The aim of this third study is to investigate the relationships between friendship and similarity of construct content and organisation in a group of an older average age than the groups in previous studies. The group studied were part-time (evening) students who were almost half-way through the second year of their course which took place on two evenings each week. It was felt that, given the part-time nature of the course, this was a reasonable length of time in which to expect friendships to develop. The group was all-male and this, together with the age of the group, made predictions difficult for the findings of the above studies plus those of Duck suggest that such a group would be less likely to support the hypothesis of a relationship between friendship and construct similarity than most other groups. This seems particularly likely to be the case in a group where members meet relatively infrequently and whose main commitments are probably outside the group, at home and at work. Perhaps the best that can be done is to predict that friendship and similarity will be associated only if the sociometric data reveals that the number of close friendships and friendships formed within the group is proportionately similar to the numbers obtained in the previous two studies.

Method

Subjects: 12 male part-time Business Studies students at Middlesex Polytechnic. The mean age of the 11 subjects who provided their age was 32.9 (s.d. = 9.73).

Procedure: The same procedure was used as in the second study. Subjects completed a 12x12 repertory grid and the friendship questionnaire.

Results

Sociometric Data: Only two choices of 'close friends' and 14 of 'friends' were made within the group. Of these 10 were reciprocated which meant that seven of the group were involved in a reciprocated friendship. There were no 'close friendships' and the number of sociometric choices is such that only weak support for the similarity hypothesis might be expected.

Construct Similarity: As in previous studies three independent judges compared every construct of every subject with every construct of every other subject and assessed each pair of constructs for conceptual¹ and for literal similarity. Constructs were also classified as being Psychological, Role, Interaction or Nonclassifiable. The percentage of psychological constructs was 57.6%, slightly lower than in the two previous studies.

For each of the seven subjects involved in a reciprocated choice two scores could be derived: the first being the mean number of constructs

¹ Kendall's coefficient of concordance (W) = 0.6576 ($p < .001$).

he shared with his friends and the second being the mean number shared with all other subjects. These similarity scores were obtained from four similarity matrices (literal criterion: all constructs; literal criterion: psychological constructs only; conceptual criterion: all constructs; conceptual criterion: psychological constructs only), and a paired t-test used in each case to compare friends and nominal pairs.

As shown in Table 15.1 there was a general tendency for friends to be less similar than nominal pairs; a tendency which reached significance in the case of conceptual similarity of all constructs (friends' mean = 0.5714, nominal mean = 1.0222, $t = 2.797$, 6 d.f., $p < .05$).

Table 15.1: Mean Number of constructs shared by friends and nominal pairs.

Literal Criterion	All Constructs		Psychological constructs	
	Friends	0	Friends	0
	Nominal Pairs	0.1508	Nominal Pairs	0.0460
	t	-1.949	t	-1.413
Conceptual Criterion	Friends	0.5714	Friends	0.4286
	Nominal Pairs	1.0222	Nominal Pairs	0.6254
	t	-2.797 ¹	t	-0.849

Notes: N = 7; ¹ $p < .05$.

That the comparison for literal similarity of all constructs approaches significance ($t = 1.949$, 6 d.f., $p < .10$) is due largely to the very low numbers of constructs judged to be literally similar; no friendship pair shared any literally similar constructs. The use of a t-test has had some effect in exaggerating the significance of the difference between friends and nominal pairs but not enough to cause any concern.

An attempt was made to increase the number of subjects involved in the comparisons by performing a 'between-group' analysis as in Study 1. Because of the low number of reciprocated choices within the group this analysis required that unreciprocated choices be considered equivalent to reciprocated choices for the purposes of defining the sociometric groupings within the main group. On this basis all of the subjects could be assigned to one of three sociometric groupings. Two similarity scores could be derived from each of the four matrices for each subject: the mean similarity score of the subject with other members of his sociometric group, and his mean similarity score with all other subjects.

Again neither comparison involving similarity of psychological construing was significant (literal similarity: within group mean = 0, between group mean = 0.0708, $t = 1.589$, 11 d.f., n.s.; conceptual similarity: within group mean = 0.6667, between group mean = 0.6847, $t = 0.217$, 11 d.f., n.s.). Similarity of all constructs was found to be significantly greater between members of different sociometric groups than between members of the same sociometric group: this was the case both when the literal criterion was employed (within group mean = 0.0333, between group mean = 0.2049, $t = 2.587$, 11 d.f., $p < .05$)¹ and when the

¹ A Wilcoxon test on this data is also significant ($T = 0$, $N = 6$, $p = .05$) thus indicating that the result does not follow from the use of an inappropriate test.

conceptual criterion was used (within group mean = 0.7972, between group mean = 1.1211, $t = 4.241$, 11 d.f., $p < .01$). Thus, as far as these last two comparisons are concerned, the effect of the between-group analysis, despite its rather weak basis, has been to emphasise the relationship between friendship and construct dissimilarity in this group.

Construct Organisation

Each subject's grid was submitted to analysis by INGRID and the percentage of variance accounted for by the first principal component (RC%) was taken, as before, as the measure of construct organisation. For each of the seven subjects involved in a reciprocated choice two scores were calculated: the first being the mean absolute difference between his score and those of his friends, and the second being the mean absolute difference between his score and all other subjects. Friends were found to be more similar than nominal pair (mean differences = 7.543 and 9.415 respectively); the difference falling just short of significance ($t = 2.414$, 6 d.f., $p < .06$). A further analysis, between sociometric groups, did not, as with construct content, strengthen this result; rather the within group mean (10.495) and the between group mean (10.211) were only slightly and non-significantly different ($t = 0.253$, 11 d.f., n.s.).

Discussion

The main hypothesis tested in this study was that similarity of personal construct content would be associated with friendship in this group only if a reasonable number of friendships had developed. The sociometric data revealed that very few friendships had formed within the group and, of those that had, none were close friendships. This is not too surprising given the nature of this group; what is unexpected is that friendship should have been associated with construct dissimilarity. Although there was a strong hint of such a possibility in the first study (among the females of the larger and younger sociometric group) this, as far as the author is aware, is the first study to obtain such a finding. Given the weak and somewhat dubious nature of the sociometric group analysis it is remarkable that the relationship should still have held; this suggests a very general tendency to prefer dissimilarity within this group.

The emphasis in Duck's work has been on the importance of similarity of personal constructs in friendship, but he has recognised that dissimilarity may also, at times, be attractive. Basing his argument on Kelly's Choice Corollary¹ he suggests that friendship choice may reflect the extension of the system encouraged by interaction with dissimilar others as well as the definition of the system encouraged by interaction with similar others. Either may be consensually validating; however dissimilarity is so only if it exists within the context of higher-order similarity which provides a safe basis for the exploration of the unknown (Duck 1977a; 1979).

¹ 'A person chooses for themselves that alternative in a dichotomized construct through which they anticipate the greatest possibility for the elaboration of their system' (Kelly 1970).

The question to be considered here is whether the findings of Study 3 mesh with the proposal that dissimilarity may be liked but only if it exists within the context of some higher-order similarity. For example, in the study of McCarthy and Duck (1976) attitude similarity/dissimilarity was varied only in terms of relatively unimportant attitudes and within the context of similarity of more important attitudes. In considering the findings of Study 3 in the light of this point two possibilities emerge. Firstly it may be that the existence of similarity between friends in terms of more important constructs was not revealed because relatively unimportant constructs were elicited in terms of which friends were dissimilar. Secondly, it could be argued that similarity of degree of construct organisation provided the background context of higher-order similarity within which friends could explore their dissimilarity of construct content.

Neither of these arguments is unproblematic. There seems no reason to suspect that more trivial constructs were produced in this study than in others, though there was a slight fall in the number of psychological constructs elicited. The second possibility rests on similarity of construct organisation being considered to be of a higher order than similarity of construct content and, as has been argued previously, it is not clear that this assumption is tenable. But perhaps the greatest difficulty lying in the way of reconciling the results of Study 3 with Duck's model is revealed in the sociometric data obtained. The greatest problem in the testing and extending of his model is identifying the 'stage' of development a particular relationship has reached and thereby specifying the filters that should be in operation. Thus it is impossible to identify clearly a stage in a relationship at which some degree of construct dissimilarity will be preferred; however,

such a preference would presumably manifest itself no earlier than a preference for some degree of attitude dissimilarity and, most probably should not appear until some time later i.e. at a stage beyond that reached by the 'tentative friends' of McCarthy and Duck's (1976) study. However, the low number of friendships, and their lack of depth (i.e. no 'close friends'), within the group studied here, suggests that such a moderately advanced stage of friendship development has not, in general, been reached, thus leaving both of the above accounts unsupported. Indeed the sociometric data obtained is very similar to that reported by Duck (1973b experiment D) who, however, did find evidence for the existence of an association between friendship and construct similarity in the all-male group he studied.

A third interpretation of the results requires some modification of Duck's proposals but is still based upon them, as well as owing something to the point, stressed by Thibaut and Kelly (1959) in their concept of 'comparison level for alternatives', that what occurs in any one dyadic relationship will not be unaffected by the other relationships in which the participants are involved. It is suggested that the 'security' provided by higher-order similarity, and required for the explanation of dissimilarity between friends, is not necessarily provided by the same dissimilar friends. Rather, in some circumstances, such security will be provided by the validation received from other people yet will still provide enough of a footing for extension of the system through interacting with dissimilar others. This is not to say that no validation is offered from these dissimilar friends for such core-role constructs of oneself as likable, worth knowing etc. These will usually receive support from knowing that one is liked by those whom one likes. Nor is it to say that no similarity will exist between the

people involved, for mutual communication would be difficult otherwise. Rather it is simply to suggest that two people need not, in all circumstances, be unusually similar at a higher-order level in order for relative dissimilarity at a lower level to be interesting and attractive.

A group, such as the one studied here, in which the likelihood of close friendships developing is limited, from the outset, by restricted expectations regarding the extent and range of future interaction, is one in which such circumstances as suggested above could arise. The security of validation involved in the recognition of higher-order similarity could be provided by close friends and lovers outside the group studied, and the limited expectations of interaction within the group could also have a 'liberating' effect in allowing for the exploration of others' dissimilarity without the dangers, consequent upon the difficulties of withdrawal, usually attendant upon such exploration. (c.f. the finding of Goldstein and Rosenfeld 1968, that greater insecurity was associated with a desire to associate with more similar others). In Duck's (1973b experiment D) similar study no such 'situational' constraints operated to limit interaction and so it would be expected that any friendships formed would be on the more usual basis of similarity.

The modification of Duck's model required by this interpretation involves the extension of an argument he himself put forward (1977b) that 'friendship and marital choice ... follow exactly the same processes' up to a certain point but 'they proceed a certain distance down a given road before branching down their own particular crossroad'. The interpretation proposed here involves the possibility of such branching taking place at an early stage of relationship development such that, in the circumstances outlined here, a different sequence of filters would be involved than in relationships which develop in more 'open' situations.

Duck has, on the whole, tended to suggest that the order of filters is invariant but evidence is generally lacking on this point.

The results of Study 3 are, of course, open to a number of interpretations. It may be, for example, that, in general, older males do not choose their friends on the basis of construct similarity. However, the third interpretation presented above, whether it is useful in other respects or not, has the advantage of stressing the influence of the context within which the friendships develop. This seems important given the difficulty of explaining the differing findings of the first three studies only in terms of stages of development. Duck (1973b experiment H) has considered the part played by context mainly in terms of whether progress along the main road followed by all developing relationships is speeded up or slowed down in different circumstances, while the interpretation above suggests that alternative routes may be taken in different circumstances. Whichever of these alternatives turns out to be more useful the findings of the studies reported here suggest the complexities with which the filter model of friendship development has to cope.

CHAPTER SIXTEEN

Study 4: A Comparison of Subordinate and Superordinate

Construct Similarity in Established Friendships

In the three studies so far reported the relationship between construct similarity and friendship has not been found to be simple. As well as a preference for similarity a relationship between construct dissimilarity and friendship has also been found. These seemingly conflicting findings may be reconciled in terms of Duck's suggestion that, at certain stages in the development of a relationship, dissimilarity will be attractive but only when it exists within the context of higher-order similarity. One implication of this suggestion is that on those occasions when friends have relatively dissimilar personal constructs they will share constructs which are superordinate to these, and it is similarity of relatively subordinate and superordinate constructs between friends which will be investigated in this study. From Duck's early model (Duck 1973b), which posits the discovery of progressively deeper levels of interpersonal similarity as the basis of friendship development, it would be predicted that the more intimate the friendship then the more superordinate the constructs which are shared. In well established friendships then it must, according to the model, be the case that similarity of superordinate constructs exists and the higher the level of superordinacy involved then the less likely it is that dissimilarity of these constructs will ever be attractive. Thus any finding of a lack of a relationship between

well-established friendship and similarity of relatively highly superordinate constructs would be strong evidence against the usefulness of Duck's model as it now stands. The main hypothesis to be tested here is that there will be a relationship between similarity of superordinate constructs and friendship in a group who have known each other for 18 months. It is not possible to predict the nature of the relationship between similarity of subordinate constructs and friendship since this will be more dependent on the stage of relationship reached (c.f. McCarthy and Duck 1976) and it will therefore, be predicted simply that similarity of superordinate constructs will have a stronger relationship to friendship than similarity of subordinate constructs.

A number of previous studies may be interpreted as providing support for the idea that higher-order similarity plays a particularly important part in friendship. For example, within the attraction paradigm, the more important (Byrne et al 1968) or the more interesting (Clore and Baldridge 1968) the similar or dissimilar attitudes of the bogus stranger then the greater the effect on attraction ratings. In a similar vein, Byrne and Rhamey (1965), demonstrated the more powerful effect on attraction of personal evaluations over attitude similarity. A similar effect was obtained by Walster and Walster (1963) who actually found a preference for dissimilarity when subjects were assured that they would be liked whichever discussion group they chose to join.

Studies which more directly lend support to the hypotheses of this study are those of Bender (1969) and Landfield (1971). The former has shown that his subjects perceived their friends as agreeing with their own construction of themselves and that this effect was particularly strong on superordinate constructs with perceived disagreement, when it existed, tending to be at a more subordinate level. Disliked individuals,

on the other hand, were seen as disagreeing at a superordinate, rather than subordinate level. Landfield (1971), in his study of therapist/client congruency, found that similarity of personal construct content was associated with non-premature termination of therapy and that this association was particularly strong for similarity of constructs which were highly interrelated with other constructs (a measure which Landfield took to indicate superordinacy).

The group chosen for study in this next investigation was that which had previously been looked at in the first study. This was partly for the sake of convenience since it was already planned to collect sociometric data from this group after 18 months acquaintance, and partly for the reason that it was thought that, since no clear-cut relationship existed between construct similarity and friendship after six months acquaintance, the use of this group would provide a particularly tough test of the hypothesis. In order to 'assess' superordinacy Hinkle's (1965) laddering technique was used since this has the advantage of eliciting superordinate constructs, thus allowing investigation of similarity of construing at a high level of superordinacy.

Method

Subjects: the same 23 subjects as had provided data after 18 months acquaintance in Study 1 took part.

Procedure

Subjects were contacted and asked to take part in a follow-up study to the one in which they had previously acted as subjects, 12 months earlier. Each subject was tested individually in an informal interview

setting. Constructs were elicited from each subject in two ways: firstly using the usual method of comparing triads and, secondly, using the laddering technique.

Twelve constructs were elicited using the triad method. A different method to that used in other studies was employed with the investigator, rather than the subject, writing down the constructs. It was thought interaction between the investigator and the subject, at this stage, would aid in the laddering procedure to follow. The subject was given a role title list, as used in previous studies, and 12 small cards. Instructions to the subject were very similar to those of previous studies. She was asked to write the names of 12 people on the cards, one name being her own and the other 11 being people who each fitted one of the roles on the list. Each card was then given a number from one to 12 and laid with numbers uppermost and names downwards on the table. It was explained to the subject that her task was to produce 12 constructs. The investigator would give her three numbers at a time (these numbers had been predetermined so that all elements would appear in three triads and such that no pair of elements would appear together twice); the subject was to turn over the appropriate cards and think of a way in which two of the people so revealed were similar and at the same time different from the third. The investigator would then write down the construct produced, though occasionally a seemingly trivial construct was questioned along the lines indicated by Kelly (1955, pp.222-223). This, however, was rarely necessary and the major problem was rather in restricting subjects to one construct per comparison. Subjects were asked to produce 12 different constructs if possible, but only in those cases in which the same words were used to describe two constructs did the investigator intervene to ask whether the two constructs were the same or different. Subjects were not asked to reveal the identity of the elements in their Reptest

and the investigator did not ask to see the cards.

Once 12 constructs had been produced in this way the subject was handed the sheet on which they were written and asked to pick out the three dimensions which she considered to be 'the most important ways of looking at people'. These three constructs were then used as the basis for the laddering procedure. The first construct would be taken and the subject asked firstly, which pole of the construct she would, ideally, prefer to be described in terms of , and secondly, why she would prefer to be described in terms of this pole rather than the other. Thus, for example, if a subject said that she would rather be sociable than unsociable she would be asked 'why would you prefer to be sociable rather than unsociable?' or 'what is there about being sociable which makes you prefer it to being unsociable?' or, if the subject was having problems framing her answer, 'why do you not want to be unsociable?' Whatever the subject said in reply would be taken down e.g. if the subject said '[I would prefer to be sociable] because I would meet more people', the phrase 'meet more people' would be written down and the contrast pole of the construct prompted by saying 'whereas if you were unsociable ...?'. This procedure would be repeated with each new construct produced until the subject could produce no more, at which point a new ladder would be started by taking the second most important construct from the Reptest as its base. In this way three ladders of constructs were elicited from each subject.

A number of points can be made about this procedure:

- (a) In cases where the subject did not have a preference for either pole of a base construct but preferred to be 'in the middle', two ladders were constructed by beginning from the two constructs 'construct pole A - preferred description' and 'preferred description - construct pole B'.

(b) Most subjects grasped very quickly what was required and would often provide a construct pole, and ask themselves the question 'why?', without prompting.

(c) In cases in which the subject embarked on a long and detailed account of their reasons for preferring to be one thing rather than another, the investigator interrupted as little as possible other than to say such things as 'can you boil all that down for me?' or to ask the question 'why?' in a slightly different way as indicated above.

(d) As might have been expected ladders had a tendency to converge. When this occurred it was generally quite obvious and the second ladder was not continued.

When all three ladders were completed subjects were asked to complete the friendship questionnaire as described in Study 1, were thanked and paid 50 pence for their participation.

RESULTS

Sociometric Data

This was presented in Study 1.

Construct Content

A more complex procedure than in previous studies was involved in the assessment of content similarity. As previously the 12 constructs elicited from the Reptest were written on index cards, two per card, but were numbered in such a way that the three constructs which the subject had picked as being most important were numbered 10, 11 and 12. Six other constructs (numbered 13 - 18) were obtained from each

subject's ladders. All subjects had produced at least six constructs in the laddering procedure. In cases where more than six had been produced then the following criteria were used for selection:-

- (a) At least one construct was taken from each of the three separate ladders.
- (b) Constructs higher in a ladder took precedence over those further down.
- (c) As far as possible an attempt was made to exclude constructs which seemed to be restatements of ones already included. In cases of doubt the constructs were assumed to be different.

In the majority of cases the choice was clear cut; in other cases it is thought that the constructs chosen were representative of those elicited from the subject. Three judges were again used to assess the similarity of constructs by comparing all 18 constructs of each subject with all 18 constructs of every other subject. The conceptual criterion of similarity was used since the literal criterion is appropriate only at the early stages of a relationship (Duck and Spencer 1972; Duck 1973b). Overall, reliability was acceptable ($W = 0.5338$, $p < .001$).

Two similarity matrices were constructed, one for subordinate similarity and the other for superordinate similarity, as follows. For each subject the constructs numbered 1 - 9 were classed as subordinate constructs and those numbered 10 - 18 were classed as superordinate constructs. Given this, one way of proceeding, which was rejected, would have been simply to consider these two classes of constructs entirely separately. This would have meant ignoring all cases in which the subordinate constructs of some subjects had been judged similar to the superordinate constructs of other subjects. (i.e. a subordinate matrix would have been produced as in previous studies but as though each

subject had only produced 9 constructs those numbered 1 - 9, while the second matrix would have been constructed in exactly the same way but involving only constructs numbered 10 - 18).

This alternative was rejected in favour of one which does not assume such an absolute rather than relative, view of superordinacy. In each comparison of two subjects, similarity was assessed from both of their viewpoints separately. For example, for two subjects P and O, four different similarity scores could be calculated.

(a) subordinate similarity matrix: entry P-O is the number of P's subordinate (nos. 1 - 9) constructs which are similar to any of O's constructs (1 - 18).

(b) subordinate similarity matrix: entry O-P is the number of O's subordinate (nos. 1 - 9) constructs which are similar to any of P's constructs (1 - 18).

(c) superordinate similarity matrix: entry P-O is the number of P's superordinate (nos. 10 - 18) constructs which are similar to any of O's constructs (1 - 18).

(d) superordinate similarity matrix: entry O-P is the number of O's superordinate (nos. 10 - 18) constructs which are similar to any of P's constructs (1 - 18).

One effect of adopting this procedure is that the two matrices are not, as they were in previous studies, symmetrical about their diagonals. One final point concerns those cases in which two of one subjects (P) constructs were considered similar to one of another's (O). In previous studies this would simply have been counted as one shared construct for both P-O and O-P, and this was the procedure adopted here if both of P's constructs were either subordinate or superordinate. If however, one of these constructs of P was subordinate and the other superordinate

then this would be counted in both matrices for the P-O entry; for the O-P entry it would be counted in only one matrix depending upon the number of the construct of 0 which was involved.

Construct Content Similarity and Friendship

As in previous studies up to three scores could be derived from each matrix for each subject indicating the mean similarity between that subject and her close friends, friends and others. The non-parametric trend test could then be used, as before, to investigate the relationship between similarity and friendship. Table 16.1 shows the results of this analysis and displays the mean number of constructs shared as well as the mean similarity rankings of close friends, friends and nominal pairs. While for both subordinate and superordinate similarity there was a positive trend, only in the latter case did this reach significance ($S = 23$, $z = 2.95$, $p = .003$); while only a weak trend was obtained for

Table 16.1. The relationship between subordinate and superordinate similarity and friendship, showing mean rankings of similarity and mean number of constructs shared at three levels of friendship.

Subordinate Constructs	N	Mean Ranks	Mean Number of Shared Constructs
Close Friends	15	1.70	1.933
Friends	21	1.86	1.632
Nominal Pairs	23	1.89	1.516
S		10 ^a	
<u>Superordinate Constructs</u>			
Close Friends	15	1.57	2.478
Friends	21	1.62	2.166
Nominal Pairs	23	2.20	1.704
S		23 ^{***}	

a : $z = 1.20$, n.s., *** $z = 2.95$, $p < .005$.

subordinate construct similarity ($S = 10$, $z = 1.20$, $p = 0.23$). The difference between the two trends was found not to be significant using the Wilcoxon test ($T = 30.5$, $N = 14$, $p < .10$, one-tailed).

Support has thus been obtained for the first hypothesis and weak support for the second. In order to provide an even tougher test it was decided to perform a within-groups analysis similar to those described in Study 1. While the two sociometric groups identified there are not so clearly divided after a further years acquaintance there are still only three friendships between the two groups (involving two subjects from the older group A, and three subjects from group B) and it was felt that, given the age difference between the groups, a within-group analysis would still be meaningful and provide a tougher test of the hypothesis. Of the four subjects who had not provided sociometric data at six months, one (S22), a mature female, was assigned to group A and the others were assigned to group B. The within-group analysis mainly involved, in comparison to the previous analysis, a restriction on the number of nominal pairs a subject was involved in.

The effect of this procedure was slight. Again similarity of subordinate constructs was not significantly related to friendship ($S = 9$, $z = 1.10$, $p = 0.27$) while similarity of superordinate constructs was ($S = 19$, $z = 2.52$, $p = 0.01$). This difference between the two trends was again not significant ($T = 29.5$, $N = 13$, n.s.).

Sex differences were investigated; firstly within the whole group and secondly, within sociometric groupings only. Of the 16 trends obtained only one was significant; females choosing male friends within the whole group who shared more of their superordinate constructs than did other males ($S = 9$, $z = 2.16$, $p = .03$). At the superordinate level of similarity the three other trends involving the whole group did, to varying degrees, approach significance (females - females: $Z = 11$,

$z = 1.84$, $p = .07$; males - males: $S = 7$, $z = 1.76$, $p = .08$; males - females: $S = 6$, $z = 1.53$, $p = .13$), with the female subjects showing a slightly greater tendency than the male subjects to choose similar friends.

Table 16.2. The relationship between friendship and similarity of subordinate and superordinate constructs, with the data split by sex of chooser and sex of chosen, for the whole group and with comparisons restricted to within sociometric groups.

Comparison	Constructs	Within Whole Group		Within Sociometric Groupings	
		S	z	S	z
M-M	Subordinate	-1	<1	-2	<1
	Superordinate	7	1.76 ^{**}	3	<1
M-F	Subordinate	-2	<1	4	1.22
	Superordinate	6	1.53	4	1.22
F-M	Subordinate	0	<1	2	<1
	Superordinate	9	2.16 ^{***}	3	<1
F-F	Subordinate	0	<1	3	<1
	Superordinate	11	1.84 ^{**}	4	<1

* $p < .10$; *** $p < .05$.

The change to a within sociometric group analysis led to a weakening of all these trends (see Table 16.2) and in all cases involving similarity at the subordinate level there was no evidence of a relationship between similarity and friendship. None of the differences between the trends obtained at the superordinate and at the subordinate level reached

significance using the Wilcoxon test, even though one-tailed tests were employed. The results of these comparisons were, within the whole group: male-male ($T = 0$, $N = 3$, n.s.), male-female ($T = 2.5$, $N = 5$, $p = .09$), female-male ($T = 3.5$, $N = 6$, $p = .07$), female-female ($T = 18.5$, $N = 10$, n.s.), and within sociometric groups: male-male ($T = 2$, $N = 3$, n.s.), male-female ($T = 2.5$, $N = 3$, n.s.), female-male ($T = 2$, $N = 3$, n.s.) and female-female ($T = 12.5$, $N = 7$, n.s.).

Discussion

The hypothesis that similarity of superordinate constructs would be associated with established friendship received strong support in this study; the trend was significant even when comparisons were restricted to within sociometric (age) groupings though when the data was split by sex as well as by age the trends were not significant. This last set of non-significant findings can be at least partly explained in terms of the drop in the numbers of subjects involved in each comparison. Similarity of subordinate constructs tended to be weakly related to friendship and this meant that the second hypothesis, that similarity of superordinate constructs would be more strongly related to friendship than similarity of subordinate constructs, did not receive significant support. One possible reason for this is that the procedure used in the elicitation of subordinate constructs seems to have led to a difference between the constructs produced in this study and those of previous studies, with fewer 'lower-order' constructs produced in this study, thus lessening the 'gap' between the two levels of constructs. It would have been useful, in this respect, to go down the construct ladders as well as up (c.f. Gleave 1975) thereby making the distinction between superordinate and subordinate constructs more definite.

A problem for the straightforward interpretation of the results follows from the use of the laddering procedure which, while it has the advantage of actually eliciting relatively superordinate constructs, produces constructs which have the 'self' as their focus of convenience. Since this is not necessarily true of the constructs elicited by the triad method (only three of the 12 sorts would have included the self as one of the elements) it follows that the 'superordinate' constructs elicited need not actually be superordinate to all of the 'subordinate' constructs which may be part of a different sub-system, and not 'self-constructs' at all. The results of the study could then be interpreted as indicating the importance of similarity of self-constructs rather than of superordinate over subordinate constructs. Or, to the extent that the constructs elicited by the laddering procedure indicate the directions in which the person intends to move, the results could indicate that people choose as friends those others whom they construe as moving in similar directions to themselves. This seems a plausible hypothesis and is one that does fit in with Duck's (1977a) model for the formation of friendship on such a basis would seem to hold out greater promise for the long-term maintenance of the relationship and for long-term validation of ever-deeper levels of construing.

This proposal is not incompatible with the original hypothesis since it would seem reasonable to suggest that, as friendships develop and deeper layers of similarity are sought, concern shifts towards similarity of superordinate constructs, and towards similarity of superordinate core-role constructs in particular. There is little doubt as to the strength of the relationship between the latter type of similarity and friendship in this group; as well as the analysis already presented an analysis based upon a similarity matrix which involved only the six constructs elicited

from each subject using the laddering technique also produced a significant trend ($S = 20$, $z = 2.57$, $p = .01$). However, viewed in the light of the above argument, the results of this study do not provide unequivocal support for the original hypothesis that similarity of superordinate constructs is related to established friendship, since the 'superordinate' constructs elicited were of a different type as well as of a different level to the 'subordinate' constructs.

For this reason a further test of this hypothesis will be undertaken in the next study. However it would be a mistake to over-emphasise the difference between the kinds of constructs produced by the two elicitation procedures used since their ranges of convenience would, probably, overlap considerably. There is also some weak empirical evidence for the original hypotheses which is not affected by the problems associated with the use of laddering. This is obtained by considering only those constructs from the Reptest. The three constructs identified by each subject as being most important can, as before, be taken to be superordinate relative to the other nine constructs. It would follow, from the original hypotheses, that the ~~con~~ⁱⁿclusion of these three constructs would strengthen the relationship between similarity and friendship. This was tested by deriving two similarity matrices, one based on only the first nine constructs of each subject and the second, based on all 12 constructs and comparing the trends obtained. As expected the trend derived from the first matrix ($S = 6$, $z = 0.69$, n.s.) was weaker than that obtained from the second ($S = 16$, $z = 1.99$, $p < .05$), though the difference was not significant ($T = 9$, $N = 8$, $z = 1.26$, $p = .10$, one-tailed).

The results of this study do provide support for Duck's model. It does not matter, in this respect, whether the important aspect of the similarity displayed by friends is taken to be relative superordinacy, core-role construing, or both. What does matter is that after a

relatively long time-period in which friendships could become established, there is a link between friendship and similarity of an important and 'deep' sort. It was vital for Duck's model that this should have been so. A useful extension to the model is contained in the argument above that similarity of superordinate ladderred constructs may be attractive because it indicates that the other person is moving in the same direction as oneself and that, therefore, continued friendship will, probably, lead to elaboration of one's construct system.

Similarity Matrices: A Problem in their Analysis

At this point it seems worth pointing out a problem with the method of analysis employed in previous studies. In these studies similarity, of whatever sort, has been assessed between every pair of subjects and the resulting similarity scores have been entered into a matrix which, with the exception of those in the last Study, have been symmetrical about their diagonals. Mean similarity scores have then been calculated for close friends, friends and nominal pairs along each row of the matrix. The problem with this method is that the entries in each matrix are not independent. This non-independence has two aspects:

1. Most obviously, in a symmetrical matrix each score is used twice which could have the effect of inflating any tendency present in the scores.
2. The second type of non-independence is less obvious and is best illustrated by an example. Suppose subjects A and B share two constructs and B and C share two constructs then there is a greater

probability of A and C being similar than if B and C had no constructs in common. In the same way a whole network of non-independent similarity scores can exist within a similarity matrix.

The effect of this non-independence is not entirely clear. One effect though is to make the significance levels of the tests performed in previous studies doubtful; for this reason two-tailed tests have been used throughout (as they were in Duck's studies which suffer from the same problem). It is thought that the effects on significance levels are not so great as to make invalid previous findings but it is impossible to compute exact significance levels. It had been hoped to devise a computer program which would generate many random sociometric matrices which could then be compared with each similarity matrix and an estimation made thereby of the probability of the results actually obtained. However, it was impossible to include within such a program all of the factors considered important (e.g. number of close friends and friends; relative popularity of each subject; the tendency for subjects to differ in the number of sociometric choices they made) and the project was abandoned.

Because of this problem and the doubts that it raises about the significance of the results reported here, and many of those reported by Duck, the next study will be designed to ensure that the problem is avoided.

CHAPTER SEVENTEEN

Study 5: A Quasi-Experimental Study of Sex, Age and Relationship Length as Determinants of the Relationships between Friendship and Similarity of Attitudes, Personal Construct Content, Organisation and Structure and Construct Meaningfulness

The main focus of this study will be the place, within the sequence of filters, of each of a number of different kinds of similarity. Other general aims will be to compare the importance of similarity and of the meaningfulness of others' constructs in friendship and to investigate the effects of age and sex differences. Each of these general concerns will be discussed in more detail below as specific hypotheses are introduced.

The procedure to be used in the study was adapted from Bender (1968) to minimise the problem of non-independence and to enable the investigation of sex, age and length of relationship as independent factors. Bender's procedure required subjects to name their girlfriend or boyfriend, their best friend and an acquaintance, each of these being asked for the names of three people who were, in turn, asked to provide names, and so on. This procedure will be modified here by asking subjects for the names of a same sex friend and acquaintance only and by employing length of acquaintance as a between-subjects factor. A further modification, designed to maximise independence in the data and to allow for the inclusion of a wider range of subjects, will be to use a new 'pivot' subject in each case

i.e. friends and acquaintances will not be asked to provide names of their friends and acquaintances. One other advantage of this procedure, compared to that used in previous studies, is that since the 'acquaintances' are actually identified by each subject they should be more appropriate controls than some of the nominal pairs of previous studies who may have had no opportunity of getting to know one another.

In connection with the main aim of the study four main types of similarity are to be assessed and two main stages of relationship development defined. Attitude similarity and similarity of personal construct content, organisation and structure will be assessed while 'early' friendship will concern relationships of less than six months standing and 'established' friendships will be defined as those of two years standing or more. Ideally a greater number of friendship durations would be specified but, apart from the problem of obtaining enough subjects, this would make predictions as to which kinds of similarity would be associated with friendship of different lengths very difficult to make. Given the difficulties involved in using time as an indication of stage of relationship development reached it is thought that the two durations to be used in this study will allow a fairly clear differentiation of early and established friendship.

Somewhat similar comments apply to the two age levels to be compared in this study - more would be desirable but this would need a larger number of subjects. The choice of 25 as the age dividing the two levels is obviously arbitrary and while it provides a reasonable range in the younger group of 18-25, it is not ideal to have an older group of, simply, 26 plus. Although it is convenient to do so for the purpose of this study it is not assumed that friendship processes

do not vary with age in those over 25.

Turning now to the types of similarity to be assessed it is considered important that a measure of attitude similarity be used because such similarity has consistently been found to be associated with liking (see Chapter 8) and because attitude similarity and personal construct similarity have not previously been compared. Following Duck (1973b) who argued that attitude similarity is a determinant of early rather than later friendship it is hypothesised that if such similarity is related to friendship in this study then there will be an interaction between relationship type and length such that only in relationships of less than six months standing will friends be more similar than acquaintances. The hypothesis is phrased in conditional terms because of the possibility that even among the 'early' friendships to be studied here the stage of filtering in terms of attitude similarity might have passed.

In this study the usual measure of personal construct similarity is to be supplemented by one based on a modified version of Landfield's (1971) content analysis. It is thought that the procedure used in previous studies did not always make full use of the information available, e.g. two subjects who were assessed as having one construct in common might, nevertheless, have displayed similar concerns in their other constructs while other subjects, also sharing one construct, might have very little in common in terms of their other constructs. Because the Landfield procedure makes use of all constructs in assessing similarity this problem should be overcome. Since the Landfield measure is a more general one than is Duck's which assesses similarity in finer detail it is suggested that the former will differentiate friends and acquaintances at an earlier stage of relationship development than will

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(and should be)

the latter. Thus, for example, two individuals may initially like each other because of their common concern with, say, status but in order for the friendship to develop they must also be concerned with the same aspects of status. This proposal seems consistent with Duck's view of developing friendship as involving the discovery of similarity at deeper and more personal levels.

The implications of the proposal for this study are, however, not entirely clear. A simple hypothesis is that similarity of construct categories (i.e. as assessed by Landfield's method) will be associated with friendship of less than six months standing but not with friendship of more than two years standing, while the reverse will be true of similarity of individual constructs (i.e. as assessed using Duck's method). Unfortunately this hypothesis rests on shaky foundations since the 'gap' between the two types of similarity in the filter sequence is not known and since similarity of individual constructs has previously been found to differentiate friends from others after six months acquaintance (Study 2; Duck 1973b experiments D and E). Thus along with the confident prediction that, using both measures, there will be an association between friendship and personal construct similarity must go a more tentative one to the effect that if there are any differences between the results obtained using the two measures they will fall into a pattern which fits the suggested sequence of filters.

A further factor to be investigated in the analysis involving construct content is subordinacy-superordinacy. The previous study indicated that similarity at the superordinate level was more important in well established friendships than similarity at the subordinate level

but, as previously discussed, it was not entirely clear that the factor which differentiated between the constructs was superordinacy; it may have been that it was similarity of self-constructs which was important. A different, more straightforward, measure of superordinacy will be used in this study in an attempt to replicate the findings of Study 4: subjects will simply be asked to indicate which of their constructs they consider to be most important (c.f. Bannister and Salmon 1967). It is hypothesised that any difference between subordinate and superordinate similarity in the extent to which they differentiate between friends and acquaintances will be apparent only in the case of the 'established' relationships.

The measure of degree of construct organisation will again be the percentage of variance accounted for by the first principle component after INGRID analysis. The results of Bender (1968), who found that similarity grew as relationships deepened suggest that there will be an interaction between relationship type and length such that there will be a greater difference between the similarity levels of friends and acquaintances in the longer established relationships than in those of less than six months standing. However the results of Study 2, in which a relationship between organisational similarity and friendship was found after only six months acquaintance, would suggest the possibility of a main effect of relationship type with no interaction with relationship length. This would, in fact, seem to be the best compromise between the hypothesis above, based on Bender's (1968) findings and one based on the argument that similarity of construct organisation is relatively superficial, being at the level of personality traits, and therefore appears early in the filter sequence.

Similarity of personal construct structure has not been previously investigated in relation to friendship. Structure may be seen as subsuming both content and organisation and, thus, as deeper and more personal than either. It therefore follows that the filter model predicts that structural similarity will act as a filter relatively late in the development of friendship and it is hypothesised that there will be an interaction between relationship type and relationship length in line with this prediction. The measure of structural similarity to be used will be the coefficient of convergence derived from Slater's (1972) COIN program which compares grids with the same constructs but different elements. A high coefficient indicates that the constructs are structured in a similar way in the two different grids.

It is predicted, then, that the overall pattern of results will be consistent with the following sequence of filters: attitude similarity, construct category similarity, individual construct similarity and structural similarity. The place of organisational similarity is, as has been discussed previously, more difficult to predict but it seems simplest to predict that it will follow soon after construct content similarity and before structural similarity on the grounds that it is more abstract than the former but not as 'deep' as the latter.

The effects of sex and age cannot be precisely predicted but some general points may be made. Duck (1973b) has suggested that females may be more 'advanced' in their filtering than males and, if this is the case, any interactions obtained between sex and type of relationship should be such that females are filtering at a deeper level. Unfortunately it is not possible to specify the particular types of similarity which might be involved in such an interaction.

Age differences are equally difficult to predict. While Richardson (1939; 1940) suggested that similarity might be more important for older friends than for younger friends, Izard (1960b; 1963) suggested just the opposite. It may be that the effects of age will vary with the kind of similarity involved (Richardson assessed value similarity while Izard was concerned with personality similarity) but it is not possible to make any predictions on this. The results of Study 2 and of Study 3 do suggest some hypotheses in the case of individual construct similarity, however. In the former study such similarity was found to be related to friendship in a group of younger females but in the latter study friends were less similar than nominal pairs in a group of older males. This suggests the possibility of an interaction between age, sex and relationship type with younger females preferring construct similarity and older males preferring dissimilarity. There is also the possibility of a 4-way interaction based on the different lengths of time for which the subjects of Study 2 (6 months) and Study 3 (18 months) had known each other. These hypotheses are not, however, put forward confidently as the different circumstances of the two groups are seen as more likely causes of the different results obtained in the two studies, rather than age and sex differences per se.

The other hypotheses to be considered are those concerning the meaningfulness of the constructs of friends and acquaintances. As in the first study, extremity of rating will provide a measure of such meaningfulness; it is hypothesised that subjects will make more extreme ratings on their own constructs than on others', and that they will also make more extreme ratings on their friends' constructs than

on their acquaintances. This latter effect should be greater in more established relationships (Bender 1968). It is also predicted that, following the link between meaningfulness and superordinacy drawn in Chapter 5, ratings on superordinate constructs will tend to be more extreme than ratings on subordinate constructs and that differences in rating extremity according to the source of the constructs will be greater on superordinate than on subordinate constructs on the grounds that it is at the superordinate level that individuals' constructs are most clearly differentiated and at which shared meaningfulness is particularly important in friendship.

METHOD

Design and Subjects

Three between-subject factors, each of two levels, were employed giving eight different groups of subjects. Seventy two subjects were used in all; each of whom belonged to one of 24 triads of subjects. A triad consisted of a 'pivot' subject, a same-sex friend and a same-sex acquaintance. Pivot subjects were selected on the basis of their sex, and of their age (25 years and under; over 25). An attempt was made to use a fairly wide range of subjects though many were students.

'Friends' and 'acquaintances' were contacted on the basis of their having been named by a pivot. Pivots were assigned to one of two conditions and asked for the names of two others. These were:

(1) Long Acquaintance condition (a) a good friend of the same sex of the pivot whom he or she had known for at least two years, and

(b) an acquaintance, also of the same sex, whom the pivot had known for at least two years but did not get on with well enough to consider a friend.

(2) Short Acquaintance condition: (a) someone of the same sex whom the pivot subject had known for six months or less and considered a friend, and (b) an acquaintance of the same sex whom the pivot had known for six months or less and did not get on with well enough to call a friend.

If a pivot named someone who had already taken part in the study he or she was asked for an alternative name.

Of the three between-subject factors, sex and length of acquaintanceship apply equally to pivots and to friends and acquaintances. In the case of age, however, it was not, in every case, possible to restrict the pivot's choices to a friend and/or an acquaintance of his own age-group.

Materials and Procedure

Before pivot subjects completed any of the forms or scales it was first confirmed that they could provide the names of, potentially contactable, people who fitted the roles of friend and acquaintance, as described above, depending upon condition (long or short acquaintance). Once this had been done pivots were told that there were three parts to the study, the first two of which would be completed in one session while the third would be left for another session to be arranged.

Part One: Construct Elicitation

Subjects were given the following:

(a) 16 small index cards

(b) a role title list (father, mother, brother nearest own age, sister nearest own age, wife or current girlfriend, husband or current boyfriend, ex-girlfriend or ex-boyfriend, male friend, female friend, disliked male, disliked female, favourite teacher, disliked teacher, person you admire, someone who seems not to like you, most interesting person you know personally, most successful person you know personally, person in authority whom you like(d), person in authority who is difficult to get on with, yourself).

(c) a Reptest sheet: this contained 16 rows of three columns. The first and third columns were labelled 'How Similar' and 'How Different' respectively. The second was labelled 'Comparison' and in this column, in each row, were three numbers which corresponded to the elements which were to be compared. The numbers in each row were determined randomly with the constraints that each number between one and sixteen appeared an equal number of times, and that the same two numbers should not appear together on different rows.

(d) A copy of the instructions, as below.

PART ONE

This part of the study is concerned with some of the ways in which you categorize people. The idea is that you think of 16 different people, including yourself, and then compare them in threes.

There are 3 main processes involved:

(1) Using the 'role title list' as a guide, think of 16 different people (including yourself) covering as wide a range of roles as possible. As you decide on the people can you write their names or initials on the cards and number the backs of the cards. Thus you will end up with 16 cards numbered 1 to 16 with a different person represented on each card.

N.B. I'm not interested in knowing the particular people you are comparing and will not be collecting the cards afterwards.

(2) Spread the cards out, numbers uppermost, in some order from 1 to 16. Turning now to the other sheet you will see that in the column headed 'COMPARISON' there are 3 numbers in each row. These correspond to the people you are to compare on that row. Turn over the corresponding cards to see which 3 people are referred to. Now think of an important way in which two of these people are similar and at the same time different from the third. Write down in the 'HOW SIMILAR' column a word or short phrase describing the characteristic that the two similar ones share; and in the 'HOW DIFFERENT' column the opposite which is the description of the third person. Then go onto the next row.

For example: Two of the 3 people may have dark hair while the other has fair hair. Therefore you would write 'dark haired' in the 'HOW SIMILAR'

column, and 'light haired' in the 'HOW DIFFERENT' column. Perhaps in another row the distinction would be 'right-handed' VERSUS 'left-handed'.

These examples are deliberately trivial ones (so as not to put words into your mouth!) - hopefully you will think of more important distinctions. A final word - please try not to repeat yourself unless you feel it is necessary.

(3) Finally can you look back and tick those 8 dimensions which you feel are the most important.

Please ask if you are not entirely clear about these instructions.

These instructions were gone through with the subject by the experimenter who made sure that they were understood. The experimenter usually remained with the subject throughout the testing period without, however, interrupting the subject unless problems arose. When the subject indicated that he had finished the experimenter checked that all rows had been completed and eight of the constructs ticked as important. The subject was then given the materials for the next task.

Part Two: Semantic Differential

Each subject was given an eight page booklet: each page containing 10 nine-point rating scales. At the top of each page was typed the concept to be rated on those scales. The 10 dimensions used were, in order, wise-foolish, slow-fast, worthless-valuable, bad-good, aggressive-defensive, beautiful-ugly, soft-hard, active-passive, unpleasant-pleasant, and weak-strong. Five of these dimensions are

considered evaluative, three reflect potency and two are concerned with activity (c.f. Osgood et al 1957). The order of the scales, and the order of the poles of each scale, were the same for each subject and for each concept, though they were determined randomly in the first instance.

The concepts to be rated were Womens Lib., Nationalisation, Fashion, Smoking, Conservation, Police, Abortion and Modern Art. The concepts were chosen as being ones in terms of which people might differ in their attitudes. The order in which the concepts were rated was determined randomly for each triad of subjects.

Subjects were presented with the booklist and told that it contained a series of rating scales on which they were to rate the concept listed at the top of each page. They were to work quickly without pondering over each rating. The use of the rating scales was demonstrated with an example. Subjects were told to use the mid-point of a scale if they thought that the scale was irrelevant to the concept being rated, or if they thought both poles of the scale applied equally. Otherwise they were to use one of the four scale points to either side of the mid-point, depending on which polar term applied and the strength of its application. Subjects were asked again to work quickly but to make sure that they did not miss out any ratings.

When this task had been completed pivot subjects were reminded of the descriptions of friend and acquaintance, which they had been given earlier, and were asked for names and instructions as to how to contact these two individuals. If the experimenter was asked why he wanted to contact them he replied that he would like them to take

part in the study and would explain in more detail after the second session. The pivot subject's aid was sometimes sought in contacting his friend and acquaintance. The pivot subject was then asked for his age and occupation, reminded that he would be contacted again and thanked for his help.

Friends and acquaintances were contacted and usually agreed to help. Testing usually took place within a week of the pivot subject's testing but in some cases the interval was much longer (up to six weeks). The procedure was identical for friends and acquaintances and differed from that described above only in that all three tasks were completed in the one session. Friends and acquaintances both completed the Reptest and the Semantic Differential scales before being presented with the following task.

Part Three: Construct Rating Scales

Friends and acquaintances were given an eight page booklet which contained a set of rating scales such that eight people could be rated in terms of 16 constructs. The format of the scales is as in the example in Appendix 6, i.e. the eight people were all rated in terms of one construct before moving onto the next. Subjects were also given a 6" x 4" index card: this contained, on the left hand side, a list of eight roles (self, 2 male friends, 2 female friends, a disliked male, a disliked female, an admired or respected person), and, on the right hand side, a series of eight ruled lines such that, when the card was placed alongside the rating scales, each line corresponded to one of the rating scales for a particular construct.

The rating sheets had been prepared as follows. From the pivot subject's Reptest had been randomly selected four of his most important

constructs (i.e. those which he had ticked) and four of his less important constructs (i.e. those which he had not ticked). Two identical half-completed booklets were then prepared in which these eight constructs were randomly positioned. The remaining eight constructs for each booklet were derived from the friend's and the acquaintance's Reptests respectively; again four of the more important and four of the less important constructs were taken, using, as far as possible, the same numbered constructs as had been taken from the pivot's Reptest. The constructs were selected and the booklets completed while the friend or acquaintance completed the Semantic Differential scales.

Subjects were told that the task involved making a series of ratings, using a similar type of scale to that which they had just used, but that this time, they would be rating particular people rather than abstract concepts. The people to be rated were to fit the roles written on the card, and their names were to be written in the spaces provided. The names could be written in any order and subjects were informed that the card would not be collected afterwards, thus the experimenter would not know which particular individuals had been rated. A sample rating sheet was used as an example of how the card was to be placed alongside the scales, such that each name always corresponded to 'Person n' e.g. if a subject wrote his name on the third line of the card then he was always to rate himself on the scale corresponding to Person 3. Subjects were reminded of the use of the rating scale and of the use of the mid-point to signal either that both ends of the construct applied equally or that neither end applied. Finally, subjects were asked to check through their ratings when they had finished in order to make sure that they had not missed out a page, or any particular rating.

When friends and acquaintances had finished this task they were asked for their age and occupation and thanked for their help. Once both a pivot's friend and acquaintance had acted as subjects the former was contacted again and asked to return for the second session. In this session pivots completed the construct rating scales, described above, the only difference being that, since the pivots were faced with constructs from their own, their friend's and their acquaintance's Reptests, they had to make ratings on 24 rather than 16 constructs.

The final task of the pivot subjects was to rate their friends and acquaintance on five-point scales anchored at either end by 'Know very slightly' and 'Know extremely well'. It is of interest to note that, in the conversation which usually followed the ending of the session, very few subjects showed any awareness of the fact that some of the constructs had been drawn from their own Reptests; even fewer realised that the other constructs had been elicited from their friend and acquaintance.

Preliminary Analysis

Reptests

Two methods of assessing construct content similarity were employed in this study. Two tasks were thus required of the judges; the first involved the direct assessment of similarity as in previous studies, while the second involved the assignation of constructs to categories (derived from Landfield 1971). Four judges were used: two performed both tasks, though in different orders, while the remaining two completed one task each. The instructions to the

judges provide a fairly full explanation of the procedures involved, and will be used for that purpose here, though some explanatory notes will be added at the end of the instructions. The instructions presented here are those given to the judges who did the categorisation task first and the similarity judgement task second.

' INSTRUCTIONS

There are two tasks for you; both involve assessing the meaning of dimensions used by people in describing others. Each of 72 subjects produced 16 of these 'construct' dimensions and these are written on the index cards; each card bearing two constructs. Subjects have been grouped in threes, and then each triad of subjects given a letter. Thus the envelope labelled 'A' contains the constructs produced by the three subjects A; A1; A2; while in envelope 'B' are the constructs produced by the three subjects B; B1 and B2; and so on for all the letters of the alphabet except 'I' and 'O' giving 24 envelopes in all. Each envelope contains 24 cards e.g. in envelope 'A' there are 8 cards bearing the constructs, numbered from 1 to 16, of subject A; 8 bearing the constructs of subject A1 and 8 bearing the constructs of A2.

In both of the following tasks please work through the envelopes in the following order:

[e.g.] B, W, Z, A, G, H, K, T, S, Q, D, C, Y, J, X, R, P, F, M, U,
V, N, E, L.

On both occasions work through the three practise envelopes, labelled 'Trial A', 'Trial B' and 'Trial C', before starting the task proper.'

Note: The constructs which a subject had ticked as more important were numbered 9 to 16.

'Task One: Categorisation

This requires you to assign each of the constructs to the most appropriate category chosen from a list of 19 (see attached sheet).

You should first of all familiarise yourself with the rating categories, trying to form a clear impression of the meaning of each. To this end it is necessary that you study carefully the typed sheets which give the definitions of the categories, and the photocopy of the 'Reptest Scoring Manual'. This manual gives a very full description of the categories, along with examples of the usage of the categories, and you should spend some time studying these until you feel confident that you have grasped the basic principle underlying each category. However it is very important that you should note that, although based closely on the manual, the system you are to use is not identical to the system employed in the manual:

I. In memorising the rating categories note that:

(a) Some categories given in the manual are not to be used i.e. 10a Multiple Description: 21 Extreme Qualifiers.

(b) Some categories not given in the manual are used.
i.e. 9a High Imagination; 10c Open to Alternatives;
16b Low Egoism; 18c Present Time

(c) You are not required to make use of the subcategories labelled 'a', 'b' etc., and therefore merely need to know the major categories.

(d) In some respects the definitions of the categories given on the typed sheet differ from those in the manual. Although these differences are few they are important and you should always check the definition of a category on the sheets rather than in the manual.

II. When you come to classify the constructs bear the following in mind:

(a) The whole construct is to be categorised. It is the basic meaning of the distinction involved in the construct which is important, not just the separate meanings of the words used at either end of the construct.

The manual classifies each end ('pole') of the construct separately. Because of this it is important that while you may use the 'alphabetized list of scored descriptions' as a guide you must make your own decisions about the dimension underlying any particular construct and the most appropriate category.

(b) Only one category is to be used per construct. Again this differs from the method followed in the manual where a construct can belong to a number of categories. Great care therefore needs to be taken to choose the most appropriate category out of all those which may be relevant, to some extent, for any particular construct. In making your judgements do not rely only on the names of the categories since these alone may be misleading i.e. look at their definitions.

(c) You will be using some categories not used in the manual and this could lead to confusion if too much reliance was placed on the list of scored descriptions e.g. 'imaginative' is given no score in the manual because the category of High Imagination is not being used. Always be on the lookout for gaps like this in the scored list; they are not always as clear as in this example. Always check both poles of a construct, and synonyms of both when using the scored list.

(d) You may feel that certain constructs cannot be categorised. In these cases use one of two 'non-categories':

(i) If the construct seems to 'make sense' as a dimension but does not fit into the present category system then indicate this using the symbol 'N/C' (for non-classifiable).

(ii) In other cases a construct may be too 'obscure' for you to be able to make sense of it or alternately, no matter how hard you try it may be impossible for you to see the two poles of the construct as being in opposition. In these cases it is very important that you should try and grasp what the person was getting at (N.B. Because two words or phrases are not linguistically 'opposites' does not mean that the construct is meaningless as a dimension). If however the construct doesn't finally make sense to you then indicate this with a question mark ('?').

To summarise: After familiarising yourself with the category system your task is to assign each construct to the most appropriate one of nineteen categories (or N/C or ?).

Remember that there can be no absolutely objective criteria for making these judgements. Your task is to understand as well as you can what each of the categories includes, and to try and understand what the person meant when he produced each construct, and to match these together.

Notes: (a) Judges were given a typed list of the categories and their definitions and a photocopy of Appendix B from Landfield (1971). The definitions (given below) were, in some cases, changed slightly from those given in Landfield (1971) in order to be more consistent with the modifications made to Landfield's system. The photocopy of Landfield's 'Rep Test Scoring Manual' was also changed in that lines and sections which were no longer applicable were deleted.

(b) The categories excluded (i.e. Multiple Description and Extreme Qualifiers) were excluded because they seemed to refer more to the style of construct description rather than to the actual content of the construct.

(c) The categories which were included, despite having been left out by Landfield because of low reliability, were necessary given the modification made to the original system that the whole construct rather than the separate poles be categorised.

(d) The actual categories used, with their definitions, were:

1. Social Interaction

Any statement in which face-to-face, ongoing, continuing interaction or lack of face-to-face, ongoing, continuing interaction with others is (clearly) indicated.

2. Forcefulness

Any statement denoting energy, overt expressiveness, persistence, intensity, or the opposite.

3. Organisation

Any statement denoting either the state of or process of structuring, planning and organizing, or the opposite. The statement should indicate

that a person either had or lacks a general trait of structuring, organising, and planning ability, or can be described as organised, structured, disorganised, or unstructured.

4. Self-Sufficiency

Any statement denoting independence, initiative, confidence, and ability to solve one's own problems or the opposite.

5. Status

Any statement wherein references are made to either status striving or to high prestige status symbols, or to a lack of status striving or to low prestige status symbols.

6. Factual Description

A characteristic so described that most observers could agree that it is factual. A fact would be a characteristic not open to question.

7. Intellective

Any statement denoting intelligence or intellectual pursuits, or the opposite.

8. Self-Reference

Any statement in which the person taking the test refers directly to himself.

9. Imagination

Any statement denoting subjective activity which is supplemental to or divorced from reality, or its opposite.

10. Open/Closed to Alternatives

Any description suggesting either a strong openness or little receptivity to new alternatives.

11. Sexual

Any direct reference to sexual behaviour or implicit sexual behaviour.

12. Morality

Any statement denoting religious or moral values, or describing a person in terms of such values.

13. External Appearance

Any statement describing a person's appearance which may be either more objective or more subjective.

14. Emotional Arousal

Any statement denoting a transient or chronic readiness, or lack of readiness, to react with stronger feelings such as anger, anxiety, disgust, enthusiasm, fearfulness, grief, joy, nervousness, surprise, yearning, etc.

15. Egoism

Any statement denoting self importance, or the opposite.

16. Tenderness

Any statement denoting susceptibility to softer feelings towards others such as love, compassion, gentleness, kindness, considerateness, or the opposite.

17. Time Orientation

Any statement denoting a state of mind which strongly implies an individual's orientation and expectancy towards the past, present or future.

18. Involvement

Any statement denoting a persistent effort toward that which an individual finds more generally and internally meaningful, or restated, a high or low internal and more total commitment or dedication to and strong pursuit of an interest, occupation, way of life, philosophy, or simply the state of commitment, dedication, or lack of such.

19. Humour

Any statement specifically denoting either the ability or inability to perceive, appreciate, or express that which is funny, amusing, or ludicrous.

Task Two: Similarity Judgement

You now have to directly compare the constructs provided by different subjects in order to assess the similarity between them. You are not required to compare every subject with every other one but only to compare subjects with the same letter (even here not all comparisons are made as you will see).

Within each triad of subjects the one labelled by letter only is the 'pivot'; it is his or her constructs which you are to compare with those of the other two subjects sharing the same identifying letter.

Thus for example with the 'A' subjects you would make two sets of comparisons:

(i) A with A1

(ii) A with A2

A1 and A2 are not to be compared. Similarly B's constructs are to be compared with those of B1 and B2, but those of B1 and B2 are not compared.

In order to compare constructs take the constructs of the pivot subject and lay them out in order. Then systematically work through the constructs of the two comparison subjects comparing each of their constructs with every construct of the pivot. Note down every occasion on which you think that the two constructs being compared have the same or very similar meanings.

For example, having laid out A's constructs you would take the first construct of A1 and note which, if any, of A's constructs it was very similar to or identical in meaning; this is then repeated with the second construct of A1; then with the third and so on until every construct of A has been compared with every construct of A1. This procedure is then repeated using A2's constructs.

Theoretically the number of comparisons to be made is very high; however you will find that the majority of these require little thought since the constructs involved in the comparisons are so obviously not similar.

Work through the envelopes in the same order as before remembering the three 'trial' envelopes. Do not look back to the category judgements you made previously.

Order

[e.g.] M, Z, G, E, V, R, N, H, V, D, F, J, Y, X, P, L, K, A, T, Q, B,
L, U, S.

Construct Rating Scales

Preliminary analysis of these scales involved treating the data as though it formed a number of Repertory Grids. A pivot subject's ratings, for example, were analysed as though six grids were involved:-

- i.e. (a) Ratings on pivot's constructs only (8 x 8 grid)
(b) Ratings on friend's constructs only (8 x 8 grid)
(c) Ratings on acquaintance's constructs only (8 x 8 grid)
(d) Ratings on pivot's and friend's constructs (8 x 16 grid)
(e) Ratings on pivot's and acquaintance's constructs (8 x 16 grid)
(f) Ratings on pivot's and friend's and acquaintance's constructs
(8 x 24 grid).

In a similar way both friends' and acquaintances' ratings could all be treated as forming three different grids. Thus for every triad of subjects 12 grids were analysed using Slater's program INGRID yielding a principal component analysis of each grid.

RESULTS

The results can be divided into three main sections. The first includes such preliminary analyses as 'manipulation' checks for age and knowledge ratings and also investigates the reliability of the judgements of construct content. The second section investigates the relationship between friendship and similarity of attitudes, construct content, construct organisation and construct structure. The last set of results are concerned with the relationship between friendship and construct 'meaningfulness'.

'Manipulation' and Reliability Checks

Knowledge Rating

The ratings made by pivot subjects of how well they knew their friends and acquaintances were analysed using a 2 (sex) x 2 (age) x 2 (length of relationship) x 2 (relationship type) analysis of variance with repeated measures on the last factor. The mean ratings of friends (4.0) was greater than the mean rating of acquaintances (2.21); a difference which was significant ($F = 59.645$, d.f. = 1, 16, $p < .001$). The main effect for length of relationship was also significant ($F = 8.018$, d.f. = 1, 16, $p < .025$) with friends and acquaintances of two years standing being better known than those of more recent acquaintance (means = 3.54 and 2.67 respectively).

Neither of these main effects is unexpected; it seems reasonable that the longer two people have known each other the greater their knowledge of each other will be and friends are, by definition, better known than acquaintances. That all other effects were non-significant is reassuring and indicates that, at least as far as can be detected using this crude measure, the relationships between pivots and their friends and pivots and their acquaintances do not differ inconsistently between the different groups of subjects.

Age

Two analyses were performed using the age data. A $2(\text{sex}) \times 2(\text{age}) \times 2(\text{length of relationship}) \times 3(\text{subject})$ analysis of variance with repeated measures on the last factor, which has three levels corresponding to the age of the pivot subjects, their friends and their acquaintances, was performed. Only one significant effect emerged indicating that while 'older' subjects were older than 'younger' subjects (means = 31.06 and 22.39, $F = 32.546$, d.f. = 2, 32, $p < .001$) this difference was consistent across all subject groups.

The second analysis was a similar 4-way analysis of variance but the last factor had only two levels being the absolute difference in age between a pivot subject and his friend, and between a pivot subject and his acquaintance. Again only the main effect of age was significant ($F = 7.636$, d.f. = 1, 16, $p < .025$); the age differences being greater for the older subjects than for the younger ones. This is unfortunate but probably inevitable given the design of the study which meant that the age range was much greater in the older group than in the younger group.

However, the finding probably reflects a real likelihood that as people grow older then so the age range of their friends and acquaintances increases.

The Reliability of Personal Construct Categorisation and Similarity Judgements

Each of the three judges assigned each of 1152 constructs to one of 20¹ categories. All three judges agreed in 511 (44.36%) cases, while a further 488 (42.36%) constructs were assigned to the same category by two of the judges but to a different category by the third. Thus in only 153 (13.38%) cases did all three judges disagree. Given the nature and difficulty of the task this is a high rate of agreement, equivalent to that reported by Sperlinger (1976). However, using a simple majority decision as the criterion for category assignment would have meant that 153 of the constructs would have had to be assigned to a 'non-classifiable' category. Because of this high figure it was decided not to follow through the original intention in this respect but to make use of all the categorisations, made by the three judges, in the analysis. The justification for this procedure lies in the not altogether unexpected problem voiced by judges that some constructs could equally well be fitted into more than one category and thus the final choice was somewhat arbitrary. To discard these judgements seemed to be to discard too much information and the decision to include all 3456 judgements was therefore taken.

¹ Because of the failure of the judges to make the distinction between the '?' and 'N/C' categories these were combined in all of the analyses to be presented.

The percentages of judgements involving each of the 20 categories is given in Appendix 7. In order to further assess the reliability of these judgements the categories were rank-ordered in terms of the frequency with which they were chosen and this rank-order was compared with those obtained by Sperlinger (1976). The Spearman rank-order correlations between the ordering obtained in this study and those reported by Sperlinger were 0.626 and 0.976 both of which were significant at beyond the 1% level.

As in previous studies the reliability of the judgements of similarity of construct content was assessed using Kendall's coefficient of concordance giving $W = 0.6583$ ($p < .001$).

Friendship and Similarity

Attitude Similarity

Two measures of 'attitude' similarity were used. The first involved calculating a total evaluation score for each of the eight concepts rated by each subject and then calculating correlation coefficients between the scores of a pivot subject and scores of his or her friend and acquaintance. The second index involved the use of a difference (D^2) measure (Osgood et al 1957) which, being calculated across potency and activity scales as well as evaluative scales, goes somewhat beyond assessing attitude similarity and may best be considered as similar to the 'syndetic' similarity measure of Triandis (1959).

Total Evaluation: For each concept rated by each subject a total evaluation score was derived by the simple procedure of summing the ratings of that concept on the five evaluative semantic differential scales (with some scales having been reversed). Eight such scores were thus obtained for each subject and the similarity between the scores of pivot subjects and their friends and acquaintances was assessed by a correlation coefficient.

After transformation to z-scores these correlations were submitted to a $2(\text{sex}) \times 2(\text{age}) \times 2(\text{length of relationship}) \times 2(\text{type of relationship})$ analysis of variance with repeated measures on the last factor. No significant effects were obtained (see Table 17.1).

'Syndetic' Similarity: It was thought that the above, rather crude, measure may have glossed over details of subjects' ratings e.g. two subjects could obtain equal evaluation scores for a concept despite having rated it differently on each of the five scales involved. It was therefore decided to supplement it with a second measure which involved comparing the matrix of semantic differential ratings made by a pivot subject with the matrices produced by his or her friend and acquaintance by subtracting the entries in one matrix from the equivalent entries in another, squaring these differences and then adding these squared differences to produce the final similarity score. The larger this ' D^2 ' measure then the more dissimilar were the two sets of ratings.

As before a $2(\text{sex}) \times 2(\text{age}) \times 2(\text{length of relationship}) \times 2(\text{type of relationship})$ analysis of variance with repeated measures on the last

Table 17.1: Summary of 2(sex) x 2(age) x 2(relationship length
x 2(Relationship Type) ANOVA of Attitude Similarity

<u>SOURCE</u>	<u>df</u>	<u>MS</u>	<u>F</u>
SEX (A)	1	0.2561	2.04
AGE (B)	1	0.0688	0.55
RELATIONSHIP LENGTH (C)	1	0.0459	0.37
A x B	1	0.0824	0.66
A x C	1	0.2495	1.99
B x C	1	0.1706	1.36
A x B x C	1	0.1089	0.87
Error	16	0.1254	
RELATIONSHIP TYPE (D)	1	0.0209	0.12
A x D	1	0.0079	0.05
B x D	1	0.0003	0.00
C x D	1	0.0100	0.06
A x B x D	1	0.0001	0.00
A x C x D	1	0.1202	0.71
B x C x D	1	0.2509	1.49
A x B x C x D	1	0.1344	0.80
Error	16	0.1682	

factor was performed. Again there were no significant effects (see Table 17.2). The interaction between age and type of relationship, which approached significance ($F = 3.68$, d.f. = 1, 16, $p < .08$), was due to the tendency of the younger subjects to choose friends who were less similar to themselves than were their acquaintances (means = 640.00 and 495.17 respectively, $t = 2.13$, 11 d.f., $p > .05$) while older subjects had friends who were slightly more similar to themselves than their acquaintances (means = 514.42 and 529.67). The four-way interaction which also approached significance ($F = 3.17$, d.f. = 1, 16 $p < .10$) confirms this difference between the older and younger subjects - the interaction being mainly due to the high dissimilarity between young female pivot subjects and their friends in the short-term relationship condition.

The other two interactions which approach significance are not of direct relevance to the hypotheses under test. The interaction between sex and age was due to younger females and older males being more similar than older females and younger males, while that between sex and relationship length was a result of greater similarity being present in male relationships of longer standing and female relationships of shorter standing than in male relationships of less than six months and female relationships of more than two years.

A further analysis using the D^2 measure on ratings on evaluation scales only gave very similar effects to those obtained when all ratings were considered and so is not reported here. It seems, then, that no relationship between attitude similarity and friendship has been found in this study though a weak tendency for younger subjects to have relatively dissimilar friends was discovered when the broader 'syndetic' type of similarity was considered.

Table 17.2: Summary of 2(sex) x 2(age) x 2(relationship length)
x 2(Relationship Type) ANOVA of 'Syndetic' Similarity

<u>SOURCE</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
SEX (A)	1	3554	0.05	
AGE (B)	1	24889	0.32	
RELATIONSHIP LENGTH (C)	1	8560	0.11	
A x B	1	308321	4.02	< .10
A x C	1	324559	4.23	< .10
B x C	1	49344	0.64	
A x B x C	1	32918	0.43	
Error	16	76789		
RELATIONSHIP TYPE (D)	1	50376	2.41	
A x D	1	910	0.04	
B x D	1	76880	3.68	< .10
C x D	1	43984	2.11	
A x B x D	1	27792	1.33	
A x C x D	1	137	0.01	
B x C x D	1	43140	2.07	
A x B x C x D	1	66083	3.17	< .10
Error	16	20875		

Personal Construct Content Similarity

Construct Categories

For each subject 48 judgements had been made as to the categories into which his or her constructs fitted. Therefore for each subject each of the 20 categories could be given a score indicating the number of times a construct of that subject had been assigned to that category. The similarity between pivot subjects, their friends and their acquaintances could then be assessed by calculating correlation coefficients between their category scores. After transformation to z-scores these coefficients were submitted to a $2(\text{sex}) \times 2(\text{age}) \times 2(\text{length of relationship}) \times 2(\text{type of relationship})$ analysis of variance with repeated measures on the last factor, with the results shown in Table 17.3.

The significant main effect for type of relationship was due to the greater similarity of friends than of acquaintances (means = 0.458 and 0.247 respectively). However, significant interactions between sex and type of relationship and between age and type of relationship also emerged indicating, as shown in Table 17.4, that the difference between friends and acquaintances was due mainly to male subjects and to the younger subjects. Scheffé tests showed that the significant interaction with sex was due mainly to the very low correlation between the category usage of male subjects and their acquaintances. The obtained main effect for sex was also shown to be due to sex differences in level of similarity with acquaintances rather than with friends. The age \times type of relationship interaction was due to younger subjects being significantly more similar to their friends than to their acquaintances, while older subjects were moderately similar to both friends and acquaintances.

Table 17.3: Summary of 2(sex) x 2(age) x 2(Relationship Length)
x 2(Relationship Type) ANOVA of Construct
Categorisation Similarity

<u>SOURCE</u>	<u>df</u>	<u>M.S.</u>	<u>F</u>	<u>p</u>
SEX (A)	1	0.49459	6.835	< .025
AGE (B)	1	0.00280	0.039	
RELATIONSHIP LENGTH (C)	1	0.02035	0.281	
A x B	1	0.05318	0.735	
A x C	1	0.06796	0.939	
B x C	1	0.01745	0.241	
A x B x C	1	0.11830	1.635	
Error	16	0.07236		
RELATIONSHIP TYPE (D)	1	0.43596	7.284	< .025
A x D	1	0.66370	11.090	< .005
B x D	1	0.40549	6.775	< .025
C x D	1	0.06308	1.054	
A x B x D	1	0.00000	0.000	
A x C x D	1	0.00704	0.118	
B x C x D	1	0.25157	4.203	< .10
A x B x C x D	1	0.02186	0.365	
Error	16	0.05985		

Table 17.4: Mean Construct Content (Category) Similarity between Pivot Subjects, their friends and their acquaintances, split by sex and by age.

	Friend	Acquaintance		Friend	Acquaintance
Male	0.454 ^a	0.028 ^b	Young	0.537 ^c	0.163 ^d
Female	0.422 ^a	0.466 ^a	Older	0.338 ^{c,d}	0.331 ^{c,d}

Note: In both cases means with the same subscripts are not significantly different, while those with different subscripts are, at the .01 level (a,b) or at the .025 level (c,d).

No other effect reached significance though the 3-way interaction between age, length of relationship and type of relationship did approach significance ($F = 4.203$, d.f. = 1, 16, $p < .06$). Table 17.5 shows that the interaction was due largely to the differences between younger and older subjects in their level of similarity to friends and acquaintances of more than two years standing. While the younger subjects in this group were significantly ($p < .05$) more similar to their friends than to their acquaintances the older subjects were slightly more similar to their acquaintances than to their friends. Thus for younger subjects there is a tendency for increased acquaintanceship to be associated with a greater similarity difference between friends and acquaintances while the reverse is true for older subjects.

Table 17.5: Mean Construct content (category) similarity of friends and acquaintances split by both age and length of relationship

<u>Length of Relationship:</u>	<u>Age:</u>		<u>Older</u>		
	<u>Young</u>				
	<u>Short</u>	<u>Long</u>	<u>Short</u>	<u>Long</u>	
	0.427	0.647 [*]	0.335	0.342	Friends
	0.270	0.056 [*]	0.255	0.407	Acquaintances

* difference is significant ($p < .05$).

A further analysis was undertaken to test the hypothesis that the association between friendship and similarity would be especially strong when the constructs concerned were considered relatively important by the people who produced them. This analysis involved treating the eight most important constructs of each subject separately from the other constructs of each subject. Between a pivot subject and his or her friend or acquaintance could thus be calculated two category similarity scores: one indicating the similarity of the category assignments of their most important constructs, and the other indicating the similarity of their less important constructs. A $2(\text{sex}) \times 2(\text{age}) \times 2(\text{length of relationship}) \times 2(\text{type of relationship}) \times 2(\text{importance of constructs})$ ANOVA, with repeated measures on the last two factors was performed with the results shown in Table 17.6.

The results obtained were similar to those of the previous analysis with none of the effects involving construct importance even approaching significance. The sex \times type of relationship interaction was again

Table 17.6: Summary of 2(Sex) x 2(Age) x 2(Relationship Length)
x 2(Relationship Type) x 2(Construct Importance) ANOVA
of Construct Categorisation Similarity.

<u>SOURCE</u>	<u>d.f.</u>	<u>M.S.</u>	<u>F</u>	<u>p</u>
SEX (A)	1	0.4571	11.178	< .005
AGE (B)	1	0.0188	0.460	
RELATIONSHIP LENGTH (C)	1	0.0007	0.018	
A x B	1	0.0302	0.739	
A x C	1	0.0801	1.958	
B x C	1	0.0001	0.001	
A x B x C	1	0.4230	10.343	< .025
Error	16	0.0409		
RELATIONSHIP TYPE (D)	1	0.3792	4.032	< .07
A x D	1	0.7405	7.875	< .025
B x D	1	0.1324	1.408	
C x D	1	0.0492	0.524	
A x B x D	1	0.0005	0.005	
A x C x D	1	0.0008	0.008	
B x C x D	1	0.1837	1.953	
A x B x C x D	1	0.0852	0.906	
Error	16	0.0940		

(continued)

Table 17.6 (continued)

<u>SOURCE</u>	<u>d.f.</u>	<u>M.S.</u>	<u>F</u>	<u>p</u>
CONSTRUCT IMPORTANCE (E)	1	0.0014	0.011	
A x E	1	0.0396	0.314	
B x E	1	0.0029	0.023	
C x E	1	0.2831	2.241	
A x B x E	1	0.0372	0.294	
A x C x E	1	0.0083	0.066	
B x C x E	1	0.0027	0.021	
A x B x C x E	1	0.2829	2.240	
Error	16	0.1263		
D x E	1	0.0021	0.015	
A x D x E	1	0.0324	0.230	
B x D x E	1	0.0851	0.605	
C x D x E	1	0.3216	2.287	
A x B x D x E	1	0.0011	0.008	
A x C x D x E	1	0.1348	0.959	
B x C x D x E	1	0.0014	0.010	
A x B x C x D x E	1	0.0014	0.010	
Error	16	0.1406		

significant due to the low level of similarity between male pivots and their acquaintances, though the age x type of relationship interaction did not reach significance in this second analysis. The significant interaction between sex, age and length of relationship was due to the low similarity of males in the younger, shorter acquaintanceship group and in the older, longer acquaintanceship group. This last finding does not, however, bear on the relationship between friendship and similarity and, overall, this second analysis adds nothing to the first which provides evidence that, for males and younger subjects particularly, similarity of construct content is related to friendship.

Construct Comparisons

For this analysis all cases in which two or three judges agreed that a construct of a pivot subject was similar to a construct of his or her friend or acquaintance were classed as being one of four types:

- (a) one of the pivot's most important (i.e. ticked) constructs was similar to one of the other's most important constructs.
- (b) one of the pivot's most important constructs was similar to one of the other's less important (i.e. not ticked) constructs.
- (c) one of the pivot's less important constructs was similar to one of the other's most important constructs.
- (d) one of the pivot's less important constructs was similar to one of the other's less important constructs.

Any one construct could count in up to two of the categories above but could count only once within each category.

Four similarity scores having been calculated between a pivot and each of his or her friend and acquaintance the data was subjected to a $2(\text{sex}) \times 2(\text{age}) \times 2(\text{length of relationship}) \times 2(\text{relationship type}) \times 2(\text{importance of pivot's constructs}) \times 2(\text{importance of other's constructs})$ ANOVA, with repeated measures on the last three factors. The summary table of this analysis is presented in Table 17.7.

The basic hypothesis that friends would share more constructs than acquaintances was supported ($F = 6.084$, d.f. = 1,16, $p < .05$) with friends sharing an average of 0.937 constructs and acquaintances an average of 0.583 constructs. It had been hypothesised that there would be significant interactions between relationship type and relationship length, and between relationship type and the importance of the pivot's constructs, with friends sharing significantly more constructs than acquaintances in long-standing relationships and for important constructs than in relationships of shorter standing and for less important constructs. Neither of these interactions reached significance (relationship type \times relationship length : $F = 1.032$, d.f. = 1,16, n.s.; relationship type \times pivot construct importance: $F = 1.032$, d.f. = 1, 16, n.s.). However planned comparisons did provide support for the hypotheses for, as shown in Table 17.8, friends were significantly more similar than acquaintances in long-standing relationships ($t = 2.46$, 16 d.f., $p < .05$) but not in relationships of shorter duration ($t = 1.02$, 16 d.f., n.s.) and, also as predicted, friends shared significantly more of the pivot subjects' important constructs than did acquaintances ($t = 2.65$, 16 d.f., $p < .02$) while the difference was not significant when only the less important constructs of the pivot were considered ($t = 1.64$, 16 d.f., n.s.). Sex differences are also shown in Table 17.8 and, as expected from the findings of Duck (1973 a,b) and from the results of previous studies reported here, the similarity hypothesis

Table 17.7: Summary table of 6-way ANOVA of personal construct
content similarity

<u>SOURCE</u>	<u>d.f.</u>	<u>M.S.</u>	<u>F</u>	<u>p</u>
SEX (A)	1	0.7500	0.800	
AGE (B)	1	0.0833	0.089	
RELATIONSHIP LENGTH (C)	1	0.0208	0.022	
A x B	1	2.5208	2.689	
A x C	1	0.3333	0.356	
B x C	1	0.3333	0.356	
A x B x C	1	0.1875	0.200	
Error	16	0.9375		
RELATIONSHIP TYPE (D)	1	6.0208	6.084	< .05
A x D	1	0.7500	0.758	
B x D	1	0.0833	0.084	
C x D	1	1.0208	1.032	
A x B x D	1	0.5208	0.526	
A x C x D	1	0.0000	0.000	
B x C x D	1	0.3333	0.337	
A x B x C x D	1	0.1875	0.189	
Error	16	0.9896		

Table 17.7 (continued)

<u>SOURCE</u>	<u>d.f.</u>	<u>M.S.</u>	<u>F</u>	<u>p</u>
PIVOT CONSTRUCT IMPORTANCE (E)	1	0.3333	0.314	
A x E	1	0.1875	0.176	
B x E	1	0.0208	0.020	
C x E	1	2.0833	1.961	
A x B x E	1	0.0833	0.078	
A x C x E	1	0.0208	0.020	
B x C x E	1	0.0208	0.020	
A x B x C x E	1	0.0000	0.000	
Error	16	1.0625		
OTHERS' CONSTRUCT IMPORTANCE (F)	1	1.6875	5.226	< .05
A x F	1	0.0000	0.000	
B x F	1	1.3333	4.129	< .10
C x F	1	0.1875	0.581	
A x B x F	1	0.0208	0.065	
A x C x F	1	0.7500	2.323	
B x C x F	1	0.0833	0.258	
A x B x C x F	1	0.0208	0.065	
Error	16	0.3229		

Table 17.7 (continued)

<u>SOURCE</u>	<u>d.f.</u>	<u>M.S.</u>	<u>F</u>	<u>P</u>
D x F	1	0.0208	0.022	
A x D x F	1	0.0000	0.000	
B x D x F	1	0.0000	0.000	
C x D x F	1	0.0208	0.022	
A x B x D x F	1	0.1875	0.196	
A x C x D x F	1	0.0833	0.087	
B x C x D x F	1	0.0833	0.087	
A x B x C x D x F	1	0.0208	0.022	
Error	16	0.9583		
E x F	1	2.0833	3.077	< .10
A x E x F	1	0.1875	0.277	
B x E x F	1	1.0208	1.508	
C x E x F	1	1.3333	1.969	
A x B x E x F	1	1.3333	1.969	
A x C x E x F	1	0.0208	0.031	
B x C x E x F	1	0.1875	0.277	
A x B x C x E x F	1	0.7500	1.108	
Error	16	0.6771		

Table 17.7 (continued)

<u>SOURCE</u>	<u>d.f.</u>	<u>M.S.</u>	<u>F</u>	<u>p</u>
D x E x F	1	0.0833	0.174	
A x D x E x F	1	1.0208	2.130	
B x D x E x F	1	0.0208	0.043	
C x D x E x F	1	3.0000	6.261	< .025
A x B x D x E x F	1	1.3333	2.783	
A x C x D x E x F	1	0.5208	1.087	
B x C x D x E x F	1	0.5208	1.087	
A x B x C x D x E x F	1	2.0833	4.348	< .06
Error	16	0.4792		

Table 17.8: Mean number of constructs shared with friends and acquaintances, split by relationship length, pivot importance and sex.

<u>Length of Relationship</u>	<u>Friends</u>	<u>Acquaintances</u>	<u>F vs. A.</u>
Short	0.875	0.667	
Long	1.000	0.500	**
<u>Pivot Construct Importance</u>			
Important	1.021	0.583	**
Less Important	0.854	0.583	
<u>Sex</u>			
Male	0.813	0.583	
Female	1.062	0.625	**

** p < .02; * p < .05.

received greater support from females ($t = 2.36$, 16 d.f., $p < .05$) than from males ($t = 1.13$, 16 d.f., n.s.) though the interaction was not significant ($F = 0.758$, d.f. = 1, 16, n.s.). This finding is thus rather different from that obtained using the categorisation measure of similarity when it was found that males supported the hypothesis to a greater extent than females.

While the two-way interactions between type of relationship and pivot construct importance, and between the former and sex were non-significant, there was a weak interaction between these three factors ($F = 3.161$, d.f. = 1, 16, $p < .10$). The means, shown in Table 17.9, indicate that this was a result of a slight sex difference with female pivots choosing friends who were relatively more similar in terms of the pivots' important constructs than their less important constructs, while the reverse pattern held for males. Of the four comparisons between friends and acquaintances here only that for female pivots' important constructs was significant ($t = 3.027$, 16 d.f., $p < .01$).

Table 17.9: Mean number of constructs shared by friends and acquaintances for more and less important constructs of male and female pivot subjects

<u>Pivot Construct Importance</u>	<u>Sex</u>		<u>Female</u>	
	<u>Male</u>	<u>Less</u> <u>Important</u>	<u>Important</u>	<u>Less</u> <u>Important</u>
Friends	0.792	0.833	1.250*	0.875
Acquaintances	0.625	0.542	0.542*	0.625

* These two means differ significantly ($p < .01$)

While the three-way interaction between type of relationship, pivot construct importance and length of relationship was not, contrary to prediction, significant ($F = 0.258$, d.f. = 1, 16, n.s.), there was a weak interaction between these three factors and sex ($F = 3.161$, d.f. = 1, 16, $p < .10$). This interaction showed that the sex difference, shown in Table 17.9, of females seeming to place more emphasis on similarity of more important constructs while males distinguished between friends and acquaintances more in terms of similarity of less important constructs, was mainly limited to relationships of short duration (see Table 17.10). While all comparisons between long-standing friends and acquaintances revealed the former to be more similar than the latter (significantly so in the case of females), there were weak tendencies for males to be less similar in terms of important constructs to their friends of less than six months standing than to their acquaintances, and for females to be less similar to their friends of less than six months standing than their acquaintances in terms of less important constructs. Also revealed was one of the reasons for the lack of a significant interaction between relationship type, relationship length and pivot construct importance which was that while for males the significance for friendship of sharing more important constructs seemed to increase over time this was not so for females who already distinguished between friends and acquaintances in this respect at the earlier stage of acquaintanceship ($t = 2.268$, 16 d.f., $p < .05$). The relationship between friendship and the sharing of less important constructs was, however, stronger for females in longer-standing relationships than for those in relationships of less than six months standing.

Table 17.10: Mean number of shared constructs for sex x
relationship length x relationship type x
pivot construct importance interaction

<u>Relationship Length</u>		<u>Shorter</u>		<u>Longer</u>	
<u>Pivot Construct</u>	<u>Importance</u>	<u>Important</u>	<u>Less Important</u>	<u>Important</u>	<u>Less Important</u>
<u>Males</u>					
Friends		0.833	0.750	0.750	0.917
Acquaintances		0.917	0.500	0.333	0.583
<u>Females</u>					
Friends		1.333 [*]	0.583	1.167 [*]	1.167 [*]
Acquaintances		0.583 [*]	0.667	0.500 [*]	0.583 [*]

* Friends vs. acquaintances: $p < .05$.

The above interactions, though suggestive, were only weakly significant. A stronger effect was the interaction between length of relationship, type of relationship, importance of pivot's constructs and importance of others' constructs ($F = 6.261$, d.f. = 1, 16, $p < .025$). The relevant means are shown in Table 17.11. The interaction can best be interpreted in terms of the relatively long-standing friendships being characterised, not only by greater similarity than was found in acquaintances, but also by greater agreement as to the relative importance of these shared constructs. Thus, for example, the only two significant comparisons between friends and acquaintances both

Table 17.11: Mean number of shared constructs for the length of relationship x type of relationship x pivot construct importance x others' construct importance interaction

Relationships of < 6 months standing

<u>Pivot Construct Importance</u>	<u>Importance</u>		<u>Less Importance</u>	
<u>Others' Construct Importance</u>	<u>Importance</u>	<u>Less Importance</u>	<u>Importance</u>	<u>Less Importance</u>
Friends	1.250	0.917	0.667	0.667
Acquaintances	1.083	0.417	0.333	0.833

Relationships of > 2 years standing

Friends	1.250 [*]	0.667	1.000	1.083 [*]
Acquaintances	0.417 [*]	0.417	0.833	0.333 [*]

* Friends vs. acquaintances: $p < .05$

occurred when longer-standing relationships were considered and when there was agreement as to the relative importance of the constructs involved. Further analysis confirmed that it was this 'symmetrical' construct similarity which was most related to friendship in the long-standing relationships, but showed that it was 'asymmetrical' construct similarity which most distinguished friends and acquaintances of short-standing. Table 17.12, which was derived from Table 17.11 by combining means where there was agreement as to the relative importance of constructs to give 'symmetrical' similarity and by combining means where there was disagreement to give 'asymmetrical' similarity, shows

this effect more clearly, and indicates the weak relationships obtained between asymmetrical similarity and long-term friendship, and between symmetrical construct similarity and short-term friendship (here, in fact, friends were slightly less similar than acquaintances).

Table 17.12: 'Symmetrical' and 'asymmetrical' construct similarity between friends and acquaintances for different lengths of relationship.

<u>Relationship Length</u>	<u>Symmetrical</u>		<u>Asymmetrical</u>	
	<u>< 6 mths</u>	<u>> 2 yrs.</u>	<u>< 6 mths</u>	<u>> 2 years</u>
Friends	0.959 ^b	1.167 ^{a,b}	0.792 ^{b,c}	0.834 ^{b,c}
Acquaintances	0.983 ^b	0.375 ^c	0.375 ^c	0.625 ^{b,c}

Note: Means with different subscripts are significantly different using the Scheffe test: a,c : - $p < .05$; b,c : - $p < .10$.

The six-way interaction was very nearly significant ($F = 4.348$, d.f. = 1, 16, $p < .06$) but was obviously difficult to interpret. A partial interpretation in terms of the four-way interaction just discussed would be that the latter effect held for both younger and older females and for younger males but not for older males who differentiated between friends and acquaintances of two years standing mainly in terms of asymmetrical construct similarity rather than symmetrical similarity. Older females, on the other hand, provided the most extreme support for the switch from asymmetrical similarity in

short-standing relationships to symmetrical similarity in long-standing relationships. The relevant means are shown in Appendix 8.

The one significant effect not so far mentioned is the main effect of the importance of others' constructs, which was due to the larger number of others' important constructs shared than others' less important constructs (means = 0.854 and 0.667, $F = 5.226$, d.f. = 1, 16, $p < .05$). The interaction of age with others' construct importance approached significance ($F = 4.129$, d.f. = 1, 16, $p < .10$) as a result of the above effect being much stronger among the older subjects than among the young. Given the finding of a significant main effect of others' construct importance it is somewhat surprising that the main effect of pivot's construct importance was not significant ($F = 0.314$, d.f. = 1, 16) and the meaning of these discrepant results, irrelevant anyway to the main themes of the study, is not clear.

Similarity of Personal Construct Organisation

Each subject was assigned a 'cognitive complexity' score which was the percentage of variance accounted for by the first principal component after analysis of the ratings made by the subject on his or her own eight constructs. The absolute difference between the scores of pivot subjects and their friends and their acquaintances were calculated and compared in $2(\text{sex}) \times 2(\text{age}) \times 2(\text{relationship length}) \times 2(\text{relationship type})$ ANOVA with repeated measures on the last factor. The hypothesis under test, that friends would be more similar than acquaintances, received weak support (mean differences : friends = 12.30,

acquaintances = 18.30; $F = 3.545$, d.f. = 1, 16, $p < .08$) No other effects approached significance (see Table 17.13).

Following Bender (1968), it had been suggested that there would be an interaction between relationship length and relationship type such that friends would be particularly distinguished from acquaintances in long-standing relationships. However, not only was the interaction non-significant ($F = 1.281$, d.f. = 1, 16) but the means obtained were in the direction opposite to that predicted with friends of less than six months standing being significantly more similar than acquaintances (means = 13.2 and 22.8 respectively, $t = 2.123$, 16 d.f., $p < .05$) but friends of more than two years standing being only slightly more similar than acquaintances (means = 11.4 and 13.8, $t = 0.531$, 16 d.f., n.s.).

Similarity of Personal Content Structure

Similarity of construct system structure was assessed using Slater's COIN program which compares grids containing the same constructs. Each pivot/friend and pivot/acquaintance pair had made ratings of eight individuals on the same 16 constructs: eight elicited from the pivot and eight elicited from the friend or acquaintance. These 8 x 16 grids were compared and the resulting coefficients submitted to a 2(sex) x 2(age) x 2(relationship length) x 2(relationship type) ANOVA with repeated measures on the last factor.

As shown in Table 17.14 the only significant effect to emerge was the main effect of type of relationship ($F = 5.158$, d.f. = 1, 16, $p < .05$) with friends being more similar (mean = 0.395) than acquaintances (0.281). The predicted interaction between length of

Table 17.13: Summary table for 4-way ANOVA of similarity of
degree of construct organisation

<u>SOURCE</u>	<u>d.f.</u>	<u>M.S.</u>	<u>F</u>	<u>p</u>
SEX (A)	1	239.9	1.058	
AGE (B)	1	330.0	1.456	
RELATIONSHIP LENGTH (C)	1	340.9	1.504	
A x B	1	10.3	0.046	
A x C	1	118.0	0.521	
B x C	1	83.2	0.367	
A x B x C	1	29.3	0.129	
Error	16	226.7		
RELATIONSHIP TYPE (D)	1	435.2	3.545	< .08
A x D	1	140.1	1.141	
B x D	1	78.5	0.639	
C x D	1	157.3	1.281	
A x B x D	1	16.6	0.135	
A x C x D	1	128.6	1.048	
B x C x D	1	7.8	0.064	
A x B x C x D	1	1.9	0.016	
Error	16	122.8		

relationship and type of relationship was not significant ($F = 0.285$, d.f. = 1, 16) and what tendency there was was opposite to that predicted with a greater difference being obtained between friends and acquaintances of less than six months standing (means = 0.404 and 0.263, $t = 1.986$, 16 d.f., $p < .10$) than between those of more than two years standing (means = 0.386 and 0.299 for friends and acquaintances respectively: $t = 1.226$, 16 d.f., n.s.).

A further analysis involving comparison of the ratings on the pivot subjects' constructs only was undertaken on the grounds that the same constructs would be involved in both comparisons within a triad. The major effect of this change was to weaken the main effect of relationship type ($F = 1.986$, d.f. = 1, 16, n.s.). However there were weak interactions obtained between sex and relationship type ($F = 3.615$, $p = 1$, 16, $p < .08$) and between age, relationship length and relationship type ($F = 3.902$, d.f. = 1, 16, $p < .07$) (see Table 17.15).

The sex x type of relationship interaction was due to the sex difference that while female friends were significantly more similar than female acquaintances (means = 0.459 and 0.251 respectively, $t = 2.334$, 16 d.f., $p < .05$), male friends were non-significantly less similar than male acquaintances (means = 0.261 and 0.292, $t = -0.548$, 16 d.f.). In the previous analysis involving the comparison of 8 x 16 grids both sexes had been more similar to friends than acquaintances.

The age x relationship length x relationship type interaction may be interpreted in terms of a difference between younger and older subjects in the extent to which they conformed to the hypothesised interaction between the latter two factors. As can be seen from Table 17.16 the younger subjects did conform to the predicted pattern with a stronger relationship between friendship and similarity in the longer relationship group than in the shorter relationship group. The older subjects,

Table 17.14: Summary table of 4-way ANOVA of structural
similarity of 8 x 16 grids

<u>SOURCE</u>	<u>d.f.</u>	<u>M.S.</u>	<u>F</u>	<u>p</u>
SEX (A)	1	0.10056	1.843	
AGE (B)	1	0.00494	0.091	
RELATIONSHIP LENGTH (C)	1	0.00104	0.019	
A x B	1	0.03313	0.607	
A x C	1	0.00209	0.038	
B x C	1	0.00181	0.033	
A x B x C	1	0.18688	3.424	< .10
Error	16	0.05456		
RELATIONSHIP TYPE (D)	1	0.15584	5.158	< .05
A x D	1	0.05300	1.754	
B x D	1	0.00055	0.018	
C x D	1	0.00861	0.285	
A x B x D	1	0.00026	0.008	
A x C x D	1	0.00165	0.054	
B x C x D	1	0.06743	2.232	
A x B x C x D	1	0.08292	2.745	
Error	16	0.03021		

Table 17.15: Summary table of 4-way ANOVA of structural similarity of 8 x 8 grids (pivots' constructs only).

<u>SOURCE</u>	<u>d.f.</u>	<u>M.S.</u>	<u>F</u>	<u>p</u>
SEX (A)	1	0.07395	0.540	
AGE (B)	1	0.05631	0.411	
RELATIONSHIP LENGTH (C)	1	0.01512	0.110	
A x B	1	0.02862	0.209	
A x C	1	0.00488	0.036	
B x C	1	0.00006	0.000	
A x B x C	1	0.14652	1.069	
Error	16	0.13700		
RELATIONSHIP TYPE (D)	1	0.09470	1.986	
A x D	1	0.17232	3.615	< .08
B x D	1	0.03876	0.813	
C x D	1	0.05360	1.124	
A x B x D	1	0.01658	0.348	
A x C x D	1	0.03521	0.739	
B x C x D	1	0.18600	3.902	< .07
A x B x C x D	1	0.05964	1.251	
Error	16	0.04767		

however, were actually less similar to their friends of more than two years standing than to their acquaintances while being significantly more similar to their friends than acquaintances in relationships of less than six months ($t = 2.672$, 16 d.f., $p < .02$)

Table 17.16: Mean coefficients of convergence (structural similarity) between friends and acquaintances when ratings on pivot subjects' constructs only are involved.

<u>Relationship Length:</u>	<u>Younger</u>		<u>Older</u>	
	<u>< 6 mths</u>	<u>> 2 yrs.</u>	<u>< 6 mths.</u>	<u>> 2 yrs.</u>
Friends	0.321	0.412	0.451 ^{**}	0.278
Acquaintances	0.346	0.322	0.094 ^x	0.323

^{**} Friends vs. Acquaintances: $p < .02$.

Friendship and Construct Meaningfulness

As in the first study rating extremity was taken as an index of the meaningfulness of constructs. Each pivot subject had made ratings on constructs derived from his or her own grid and from the grids of his or her friend and acquaintance. Extremity rating scores were calculated by taking the absolute deviation from the mid-point of the ratings on each construct. These were then summed to give six scores

for each pivot subject depending on the source of the constructs involved and on whether their originator had ticked them as important or not. A $2(\text{sex}) \times 2(\text{age}) \times 2(\text{relationship length}) \times 3(\text{source of constructs}) \times 2(\text{importance of constructs})$ ANOVA with repeated measures on the last two factors was performed, giving the results shown in Table 17.17.

As predicted, the main effect of source was significant ($F = 3.810$, d.f. = 2, 32, $p < .05$). However planned comparisons indicated that while ratings on the pivots' own constructs (mean extremity = 71.27) were more extreme than ratings on constructs of friends (mean = 65.67) and acquaintances (mean = 65.40) combined ($F = 7.607$, d.f. = 1, 32, $p < .01$) the difference between the latter two means was not significant ($F = 0.013$, d.f. = 1, 32). Thus the data fails to support the hypothesis that friends' constructs would be more meaningful than acquaintances'. No other effect reaches significance.¹

¹ That none of the effects involving construct importance reaches significance raises some doubts about the adequacy of either or both of these indices as measures of superordinacy (cf. Chap.5). However these doubts are partly assuaged by the results of an analysis of the ratings made by friends and acquaintances. In this analysis the main effect of source was again significant ($p < .01$) and, this time, the main effect of construct importance was also significant ($p < .01$); more extreme ratings being made on more important constructs.

Table 17.17: Summary table of 5-way ANOVA of extremity ratings

<u>SOURCE</u>	<u>d.f.</u>	<u>M.S.</u>	<u>F</u>	<u>p</u>
SEX (A)	1	42.2	0.058	
AGE (B)	1	0.7	0.001	
RELATIONSHIP LENGTH (C)	1	11.1	0.015	
A x B	1	1.8	0.002	
A x C	1	448.0	0.616	
B x C	1	1667.4	2.294	
A x B x C	1	152.1	0.209	
Error	16	736.9		
SOURCE OF CONSTRUCTS (D)	2	528.0	3.810	< .05
A x D	2	213.8	1.543	
B x D	2	171.5	1.238	
C x D	2	131.8	0.951	
A x B x D	2	8.5	0.061	
A x C x D	2	61.8	0.446	
B x C x D	2	8.5	0.062	
A x B x C x D	2	55.5	0.400	
Error	32	138.6		

(continued ...)

Table 17.17 (continued)

<u>SOURCE</u>	<u>d.f.</u>	<u>M.S.</u>	<u>F</u>	<u>p</u>
CONSTRUCT IMPORTANCE (E)	1	0.0	0.000	
A x E	1	196.0	3.375	< .10
B x E	1	28.4	0.490	
C x E	1	0.2	0.004	
A x B x E	1	38.0	0.655	
A x C x E	1	18.8	0.323	
B x C x E	1	36.0	0.620	
A x B x C x E	1	3.4	0.058	
Error	16	58.1		
D x E	2	90.8	0.726	
A x D x E	2	205.6	1.644	
B x D x E	2	73.0	0.584	
C x D x E	2	125.7	1.006	
A x B x D x E	2	291.8	2.333	
A x C x D x E	2	29.9	0.231	
B x C x D x E	2	118.9	0.951	
A x B x C x D x E	2	48.7	0.389	
Error	32	125.1		

Summary of Results

The main findings for each of the kinds of similarity and for construct meaningfulness were:

1. Attitude similarity: no significant differences between friends and acquaintances.
2. Construct category similarity: friends were more similar than acquaintances; this effect being due mainly to males rather than females and to younger rather than older subjects.
3. Construct content similarity: friends were more similar than acquaintances; there were non-significant tendencies for this effect to be greater in long-standing relationships than in short-standing relationships, for females rather than for males, and for similarity to pivots' most important constructs than for similarity to pivots' less important constructs.

'Symmetrical' similarity differentiated strongly between friends and acquaintances of more than two years standing but not between those of shorter standing, while there was a weak tendency for 'asymmetric' similarity to differentiate more in relationships of less than six months. Older males provided an exception to this general pattern.

4. Construct Organisation similarity: a weak tendency for friends to be more similar than acquaintances. Non-significant tendency for this to be greater in relationships of shorter standing.
5. Construct structure similarity: friends more similar than acquaintances when constructs of pivots and friends or acquaintances combined. Again there was a non-significant tendency

for this effect to be greater in earlier rather than later relationships. When the comparison was restricted to pivots' constructs only then female friends were more similar than acquaintances but this was not true of male friends.

6. Construct meaningfulness: subjects made more extreme ratings on their own constructs than on those of their friends and acquaintances but ratings on friends' constructs were not more extreme than those on acquaintances' constructs.

DISCUSSION

In this study friends were not found to have more similar attitudes than acquaintances but evidence for the existence of relationships between friendship and similarity of personal construct content, organisation and structure was obtained. Friends' constructs were not found to be more meaningful, as assessed by rating extremity, than those of acquaintances. A number of issues arise from the results: the most important of which concerns the order of filters within the filter model.

The Order of Filters

Duck (e.g. 1973b) has consistently argued that the emphasis on attitude similarity as a determinant of liking has been misplaced due to the focus on first impressions rather than on established friendship. This study provides strong support for this argument in that, as Duck predicts, it was at 'deeper' and more personal levels than attitudes that similarity was associated with friendship. This is an important finding for no other study has compared attitude similarity and personal construct similarity in relation to friendship.

Two methodological objections could be raised here. Firstly, although the semantic differential has been used successfully to assess attitudes (e.g. Osgood et al 1957; Osgood 1965; Tittle and Hill 1967) it has not generally been used in studies of the attitude similarity - liking relationship. However, there seems no reason to believe that

such a relationship is dependent on the attitude measure employed. Secondly, objections could be raised about the range of the attitudes of the subjects in this study in that all the correlations between pivot subjects and their friends and acquaintances were positive. Given this basic limitation, though, the range of correlations was quite wide (correlations between friends ranged from 0.130 to 0.942, and between acquaintances from 0.141 to 0.894) and it seems unlikely that any strong relationship between similarity and friendship would have been masked by the overall degree of agreement present though, ideally, there would have been a greater divergence of opinion.

The ordering, as filters, of the four types of similarity of personal construct systems was problematical but the proposed order had been personal construct content (category) similarity, content similarity of individual constructs, similarity of degree of organisation and, finally, structural similarity. While the design of the study did not allow a definite ordering to be established the results obtained did not entirely support the predictions. Considering first the two measures of construct content similarity there was little in the pattern of results to suggest that category similarity preceded the more specific construct similarity as a filter. In both cases there was a significant main effect of relationship type such that friends were more similar than acquaintances, and in neither case did the interaction with length of relationship approach significance. It had been predicted that, in the case of similarity of individual constructs, friends would be more similar, relative to acquaintances, in the longer established relationships than in those of less than six months standing. Planned comparisons revealed some support for this

prediction but the same pattern was also obtained when construct category similarity was considered thus indicating no tendency for the latter to be associated with friendship at an earlier stage than similarity of individual constructs.

One difference that did emerge from the data and which may provide some support for the proposed relative order of the two kinds of similarity in the filtering sequence was a sex difference. While male friends were significantly more similar than male acquaintances in terms of the categories to which their constructs were allocated, female friends were actually slightly less similar than female acquaintances. When individual constructs were the basis for similarity then, although the interaction between sex and type of relationship was no longer significant, it was the female subjects who provided the strongest support for the similarity hypothesis. This difference could have resulted from a difference in the kinds of similarity which male and female friendships are based on with females possibly being more 'advanced' in their filtering than males (c.f. Duck 1973b, pp.150-151; 1975b). If this were the case then the results would support, indirectly, the hypothesis that construct category similarity precedes similarity of individual constructs in the filter sequence. However, without additional backing it could not be concluded that the hypothesis had been supported. The question of sex differences will be returned to in a later section.

Similarity of degree of construct organisation was only weakly related to friendship ($p < .08$) and was found to be more strongly associated with early rather than later friendship. Although this interaction did not reach significance the pattern of means provides no support at all for the proposed sequence of filters in which

organisational similarity followed content similarity. In this respect the results resemble those of Studies 2 and 3 rather than those of Bender (1968) who found increased intimacy to be associated with greater organisational similarity. The different results of Bender's study and this one may be the result of methodological differences¹ or it may be that organisational similarity is less important in same-sex friendships than in heterosexual relationships. This could only be established by further research.

In terms of the filter model the results of this study suggest that the order of filters does not necessarily match the order in which different kinds of information about others becomes available in the normal course of interaction and developing relationships. While knowledge of the organisation of another's construct system may, being relatively abstract, be more difficult to obtain than information about the content of the other's constructs (Landfield 1971; Duck 1973b) it may also be of less interest since it has fewer implications for other aspects of the individual's construing and does not, therefore, provide such a secure foundation for the erection of a model of the other's personality (Duck 1977a). To discover similarity of organisation existing between oneself and another may have some implications for the extent to which the other may be expected to provide validation but, according to this line of argument, these implications will be weaker and fewer than those following from the discovery of content similarity and so filtering in terms of content

¹ There were three main differences: (a) the use of friends and acquaintances as new 'pivot' subjects in Bender's study; (b) the use of smaller (8 x 8) grids in this study than in Bender's who used 20 x 23 grids; (c) dichotomous ratings were made by Bender's subjects while in this study rating scales were used.

would be expected to carry on for longer than filtering in terms of organisation even though the former information would normally be available before the latter. It follows from this that, as has been previously suggested, filtering in terms of both kinds of similarity should be taking place simultaneously in early friendship.

It had been confidently predicted that structural similarity would be more a feature of later than of earlier friendship since such similarity appears to subsume both content and organisation similarity and thus to be 'deeper' than both. The prediction was not supported; while structural similarity was found to be related to friendship (when constructs of pivots and of friends or acquaintances were included) this relationship was slightly stronger in shorter relationships than in longer. When similarity was assessed across pivots constructs only then there was no longer any general relationship between friendship and similarity though weak interactions revealed that female friends were more similar in the use of pivots' constructs than acquaintances, as were older friends of less than six months standing. The existence of a relationship between similarity of construct structure and friendship is important in that it implies a rapport at a deeper level than content similarity alone, i.e. at the level of meaning. However, while the lack of consistency in the findings does fit well with Duck's emphasis on content the failure of the study to demonstrate an increasing concern with structural similarity as friendship develops may be a problem for the filter model.

Certainly, the earlier 'mechanistic' version of the model (Duck 1975b) would predict that structural similarity should, if it acts as a filter at all, operate later in the filter sequence than the more

superficial content similarity. The results obtained in this study are difficult to reconcile with this model. In the later 'predictive' filter model (Duck 1977a, 1979), in which an active search for validation is posited, the situation is more complex. The order of filters is not assumed to have changed in this later version (c.f. Duck and Craig 1978) but inferences about deeper levels of the other's personality are now seen as a basis for filtering along with the less deep information which the individual already, directly, has. Thus, for example, information about the content of another's constructs might be used to infer the structural relationships between them. Filtering would then be based not only on the more direct content information but also on the 'indirect' inferences about structure. This provides a possible explanation for the results obtained here for to the extent that these inferences about structure were accurate friends at this stage would be more similar than acquaintances in both content and structure even if 'direct filtering' in terms of structural similarity had not begun.

One problem with this explanation is that it makes it necessary, within the filter model, to demonstrate that it is possible to identify cases in which the existence of a relationship between similarity of some sort and friendship is based on 'direct' construing and cases in which it is based on inference and is 'indirect'. While such demonstrations may be relatively straightforward to make in laboratory situations (e.g. Duck 1975a) this would not seem to be so in the case of real-life relationships, in which the distinction between 'direct' and 'indirect' construing is much less clear than when an experimenter is controlling the information available to subjects. If this

distinction could not be made then, to the extent that the effect occurred, the filter model would lose one of its most important aspects i.e. that it predicts that different factors will be associated with friendship at different stages of friendship development.

Perhaps the most straightforward way of explaining why filtering in terms of structural similarity did not appear to be preceded by filtering in terms of content would be to argue that, in the normal course of interaction, as the content of another's constructs are being discovered then at least something is also learnt about the meaning (i.e. relationships with other constructs) of these constructs. Filtering could then take place on the basis of both kinds of information. Neither this nor the previous explanation can, however, account for the finding that the association between structural similarity and friendship was not stronger in later than in earlier friendship, since filtering in the former could, presumably, proceed on the basis of firmer, more detailed knowledge. It may be that this result followed from the limitations of repertory grid methods (c.f. Duck 1973b) but the fact that a relationship between structural similarity and friendship was found implies that this was probably not the case. Indeed, given that this relationship was obtained, further research is necessary making use of implication grid techniques as well as repertory grids to assess the strength and limits of the relationship. It may be, for example, that there are limits to the filtering process such that beyond a certain point, which may vary from relationship to relationship, similarity is not sought because of the personally validating construction of oneself as unique (c.f. Fromkin 1972).

To conclude this section of the discussion similarity of personal construct systems was related to friendship in this study while attitude similarity was not. However, no clear differences emerged between the types of construct system similarity in terms of their importance at different stages of relationship development. It may be that the design of the study was not sensitive enough to adequately reflect the sequencing of filters since there were only two levels of length of relationship; finer discrimination may be necessary once the stage of filtering in terms of attitudes and personality traits is over and attention focusses on different aspects of the same sub-system (i.e. content, organisation, structure), particularly since different relationships develop at different rates. This line of argument, though, fails to account for Duck's (1973b) ability to identify discrete stages in which literal or conceptual similarity was related to friendship, or when concern had shifted from a general similarity of construing to similarity of psychological construing. It may be, then, that similarity of construct content, organisation and structure all play their part as bases for filtering at the same time but perhaps emphasis falls on content similarity because people have more confidence in their construing of that aspect of other people's construing.

Superordinacy and Similarity

No mention has been made in the above discussion of the relative superordinacy of constructs; this was because while it was predicted that it would be similarity at the superordinate level which would most distinguish friends from acquaintances, particularly in the more established relationships, no definite prediction could be made as to

the positioning, within the filter sequence, of such similarity relative to organisational and structural similarity. The main aim here was to replicate the findings of Study 4 and so the main concern was with similarity of individual constructs. The effects of relative construct importance (superordinacy) were also investigated, however, in relation to category similarity with no significant effects being obtained. This may have been partly due to the category allocations of important and less important constructs, taken separately, being highly skewed with the result that the correlations obtained would have been less reliable than those contained in the main analysis - this could account for the general drop in the magnitude of effects in the analysis in which the distinction was made.

When similarity of individual constructs was considered some support for the basic hypothesis that superordinate similarity would be more important in friendship than subordinate similarity was obtained in that friends shared significantly more of the pivot subjects' most important constructs than did acquaintances, but the difference was not significant in the case of less important constructs. However, the relevant interaction did not reach significance and so, although these results are in line with those of Study 4 they do not provide very strong backing for the hypothesis. No support was obtained for the second hypothesis that superordinate similarity would be particularly characteristic of more established friendships. In both cases there were hints of sex differences with females placing more emphasis on superordinate similarity and at an earlier stage than males but, overall, there was only a little support here for the original hypotheses which were based on the expected importance of superordinate similarity.

Further analysis showed that the processes involved were more subtle than had been thought. While friendships of less than six months standing were characterised by 'asymmetrical' similarity, in more established friendships 'symmetrical' similarity was more important i.e. relative to acquaintances, friends of more than two years standing not only shared more constructs but they also tended to agree about the relative importance of these shared constructs. This implies that long-standing friends share superordinate constructs not only of the sort elicited here but also those, at a higher level still, which individuals use to monitor their own construing and thus provides support for Duck's (e.g. 1977a) view that the search for personal validation is the motive force in developing friendship. The lack of symmetry in terms of the level of importance of shared constructs in friendships of less than six months standing provided the only evidence within this study of any tendency for dissimilarity to be attractive; dissimilarity which, as Duck (1977a) would have predicted, was present within an overall context of similarity (of shared constructs), thus allowing elaboration of subjects' construct systems to involve both extension and definition as a result of their friendships.

That the switch from asymmetrical to symmetrical similarity was identified suggests that the design of the study was not too insensitive to identify changes in the basis of friendship over time and that, therefore, the failure to detect any sequence of content, organisational and structural similarity as filters was probably not due to the problems of design but rather to there not being a filter sequence as far as these three factors are concerned. On the basis of the evidence of

this and previous studies, including Duck (1973b), it does seem though that various shifts in emphasis over time can be identified in terms of content similarity (i.e. literal to conceptual, general to psychological, subordinate to superordinate, asymmetrical to symmetrical) and the existence of these rather fine changes supports the view that it is construct content which is the main concern of individuals involved in developing relationships.

Sex Differences

No specific sex differences were predicted though the basic hypothesis was that when they did occur it would be because females were filtering at a more advanced stage than males. In only one case did an interaction between sex and relationship type reach a conventional level of significance and this indicated that while male friendships were characterised by construct category similarity female friendships were not. In itself this is a surprising finding for in previous research (e.g. Duck 1973a,b) it has been female subjects who have provided strongest support for the association between construct similarity and friendship.

However, there are a few other findings which, while only approaching significance, together suggest that the above difference may be explained in terms of the basic proposal that females are more advanced in their construing. Thus, for example, it was found that while female friends were significantly more similar than acquaintances in the content of individual constructs and in structure¹, the differences between male friends and acquaintances were non-significant.

¹ pivots' constructs only.

As already suggested one possible interpretation here would be that the females had passed the stage of filtering in terms of general categories of constructs but that the males were still at this stage.

Further weak support for this interpretation comes from two interactions obtained in the analysis of individual construct similarity, both involving pivot construct importance as a factor and both approaching significance ($p < .10$). Female subjects supported to a greater extent than males the hypothesis that the relationship between friendship and similarity of pivots' superordinate constructs would be greater than that between friendship and similarity of pivots' subordinate constructs. While female friends were significantly ($p < .01$) more similar than acquaintances at this superordinate level the difference was much less and non-significant at the subordinate level. For male subjects a greater difference in similarity was found at the subordinate level than at the superordinate level. The second interaction showed that females were exhibiting this pattern in early friendship while it was only in more established friendships that male friends were more similar than acquaintances at the superordinate level.

Thus, the broad pattern of these results fit in with the idea that males lag behind females in their filtering. However, as previously discussed, it was not shown in this study that the two different kinds of construct content similarity and structural similarity could be put into any sequence as filters. If they do not operate in sequence then the obtained sex differences can only indicate that male and female friendships have different bases. Similar comments apply to those sex differences involving pivot construct importance. There was no

evidence in this study of a shift from concern with subordinate similarity in early friendship to concern with superordinate similarity in later friendship and so the sex differences that were obtained cannot be interpreted in terms of any lagging behind by the males.

It would appear that there were differences between males and female friendships in this study with female friendships being characterised by similarity at 'deeper' levels than male friendships. Despite this there is no clear evidence that this was a result of females being more advanced in their filtering than males though the pattern of results would have supported this idea had the original hypotheses about the order of filters been upheld.

Age Differences

Richardson's (1939; 1940) proposal that similarity becomes more important in friendship as people get older did not receive any great support from the results of this study. In the case of construct category similarity the opposite effect occurred with younger friends being significantly more similar than acquaintances while older friends were not. (c.f. Izard 1960b; 1963). A rather different age difference was obtained when the relationship between structural similarity (pivots' constructs only) and friendship was examined; here, the association was stronger for older subjects in relationships of shorter duration but stronger for younger subjects in relationships of longer duration. One other relevant finding was that younger friends were almost significantly more dissimilar than acquaintances in terms of syndetic similarity while older friends were slightly more similar than acquaintances.

Neither of the two hypothesised interactions (sex x age x relationship type and sex x age x relationship length x relationship type) were significant when similarity of individual constructs was assessed. There was no evidence to suggest that the different findings of Studies 2 and 3 were the result of a straightforward difference between younger females and older males such that the former prefer similarity and the latter dissimilarity. Together these results do not fall into a consistent pattern and do not support the view that age, per se, at least within the limited range studied here, will affect the course of developing friendship.

Construct Meaningfulness

As in the first study friends' constructs were not found to be more meaningful, as assessed by rating extremity, than those of acquaintances. This was despite subjects making more extreme ratings on their own constructs and sharing more constructs with friends than with acquaintances. That this latter difference was not reflected in the extremity of ratings was probably a result of the small number of constructs involved. It is difficult to identify the reasons why the results of this study and those of Study 1 should be different from those of Bender (1968), but on the basis of the findings reported here it can only be concluded that what is important in the development of friendship is not whether friends find each other's viewpoints meaningful, since the construing of non-friends may be equally meaningful, but whether, and to what extent, their viewpoints are similar.

Some Conclusions and Implications for Further Research

A number of conclusions have already been drawn; the aim here is to pick up some points relating to the design of the study and to the directions for future research. Many of the concerns of this chapter will be reconsidered in the final chapter.

The design of this study, in minimising some kinds of non-independence, allowed for a clearer comparison of the strength of the relationships between friendship and various types of similarity than had been possible in previous studies. In that the relationship between friendship and similarity of personal construct content, obtained in previous studies, was confirmed the study was successful in demonstrating that this relationship was not simply a product of the non-independence of the data in those studies.

However, the use of such a design was not without problems. Most obviously, the collection of data was very time consuming, both in terms of the time spent with each subject and in terms of the time spent contacting subjects, arranging meetings etc. The most notable effects of this 'inefficiency' in the design on the present study were the restricted number of levels of the length of relationship factor and of age, and a further restriction on the number of subjects in each 'condition'. The sensitivity of the design would obviously have been increased by the addition of other relationships lengths, but, as argued above, the difference between the two levels of this factor in this study should have been large enough to allow any differences between early and later friendship to be identified, and the finding of the switch from asymmetrical to symmetrical content similarity would seem to support this. Ideally, however, future studies would allow for greater

differentiation to be made between relationship 'stages'.

Similar constraints to those above meant that the study used a cross-sectional rather than a longitudinal design. The main problem here is that differences between long-standing and short-standing relationships cannot be definitely identified as resulting from changes over time; they may, instead, be due to uncontrolled for differences between the subjects in the two groups. In the absence of any evidence to the contrary, however, it seems reasonable to assume that any such differences may be at least partially explained in terms of relationship development. While a longitudinal design would have been better in this respect there would still have been problems of result interpretation (McCarthy 1981) and the practical difficulties of carrying out such investigations must be balanced against their advantages in other respects.

The results of the study provided support for Duck's emphasis on similarity of personal construct content in established friendship. Similarity of attitudes were compared with personal construct similarity for the first time and found to have no relationship with friendship, while similarity of other aspects of personal construct systems (i.e. organisation and structure) were less strongly related to friendship than was content similarity. This emphasis on content was further justified by the finding that it was only in terms of such similarity that more established friendships were characterised by greater 'depth' of similarity than less established friendships.

Despite this success there still remains the problems of specifying and testing the sequence of filters. The most surprising aspect of the results of this study was that structural similarity was not found to be acting as a filter at a later stage than similarity of construct content.

While a number of suggestions were made as to possible explanations of this and the more general failure to identify a sequence of filters relating to similarity of personal construct systems, it seemed best to conclude that filtering took place in terms of all aspects of construct system similarity simultaneously but that emphasis was placed on similarity of content, perhaps because people were more confident of their constructions of this aspect of others' systems than of their constructions of structure and because information about the content of another's system is more informative than information about its organisation. The usefulness of this and the other accounts can only be determined through further research into the ways in which people's constructions of others' construct system changes as they become better known and into the implications which constructions about one aspect of another's system have for other aspects (c.f. Duck 1973b, experiments F-H). In connection with structural similarity it would be useful, as already suggested, if this could be investigated using implication grid techniques.

The use of two different measures of content similarity in this study produced an interesting sex difference which is worth further exploration as is the more general question of the relationship between the two measures which do not seem merely to duplicate each other. However in any future research it may be necessary to modify Landfield's category system or to replace it altogether (with, for example, that devised by Stringer 1979), for there are a number of relatively common constructs which do not fit neatly into the categories provided. This may be a result of the different subject groups involved in Landfield's own work and in the study reported here.

CHAPTER EIGHTEEN

Evaluation and Future Outlook

It could not be claimed that the results of the studies reported above fall into a neat and easily interpretable pattern. While there is support here for the filter model, particularly in replicating Duck's findings of a relationship between personal construct similarity and friendship, more interesting, perhaps, are the implications some of the findings have for both theoretical and empirical extensions of the model. In this respect a number of issues present themselves and will be considered below under three main headings in a progression which moves from concern with specific aspects of the filter model to more general concerns - the status of the model from a Kellian perspective and the need to consider the social context of friendship.

Filtering and the Filter Sequence

The filter model predicts that different kinds of similarity will be associated with different stages of friendship with more established relationships being characterised by deeper levels of similarity. It further predicts that similarity precedes friendship though some convergence may take place as a result of friendship. Finally, the model stresses the importance of similarity of personal construct

content in the filtering process. This last aspect received good support, from the studies reported here. In all five studies some kind of relationship between construct similarity and friendship was obtained though in one case (Study 3) the relationship was negative, while in another (Study 1) it was somewhat elusive. The emphasis on construct similarity was also supported by its generally stronger and more consistent relationship with friendship than that displayed by any of the other kinds of similarity studied, and by the failure of Studies 1 and 5 to show that the meaningfulness of another's constructs is a determinant of friendship.

In connection with the idea of a filter sequence, in which other kinds of similarity play a part, the situation is less clear. There are two main issues here; one is the identification of the filters and the other is putting them into order. While these two questions are not independent, since, for example, the number of filters identified will depend on the fineness with which the process of friendship formation is analysed, it is useful to treat them separately. Apart from personality trait similarity (Duck 1973b, c) and value similarity (Duck and Craig 1978), Duck has identified different aspects of construct similarity which, he argues, operate as filters at different stages of friendship. Thus, Duck and Spencer (1972; Duck 1973b) point to literal similarity as an earlier filter than conceptual similarity and Duck (1973b) to similarity of psychological constructs being important at a later stage than more general construct similarity. In the present research neither of these distinctions proved useful and, therefore, some doubt must be cast on the status of literal and psychological similarity as separate filters from more general conceptual similarity.

This seems to be particularly true of literal similarity. In both Studies 2 and 3 in which the literal criterion of construct similarity was used the number of constructs judged to be literally similar was very low and it was difficult, given this, to see any reason for retaining it. Potentially more useful, both as a means of comparing constructs and as an indicator of different levels of filtering in terms of construct content similarity, is the category similarity measure introduced in Study 5 which did produce a different pattern of results to that obtained using the usual measure of construct similarity and which deserves to be used in future research.

In the studies (1, 2 and 3) in which such an analysis was carried out the effects of analysing similarity of psychological constructs alone was, in general, to weaken the effect obtained when all constructs were involved. This would probably have occurred whatever subset of constructs was dropped from the analyses and does not suggest any special features of psychological constructs. However, given the high percentage of psychological constructs produced by subjects in these studies and the relatively low numbers produced by subjects in construing others who are less well known to them (e.g. public figures - Duck 1973b), it does seem reasonable to assume that similarity of psychological constructs would be important given that similarity in construing acquaintances is probably more important to friends than similarity in construing public figures. To salvage this prediction from the results obtained requires that it be assumed that in none of the studies had the stage of filtering in terms of psychological constructs only been reached. Ideally further research on this should be longitudinal with small enough time gaps to allow any possible shift of

emphasis from general similarity of construing to psychological construing to be detected. It might also be useful to adopt a more differentiated category system (c.f. Duck 1975b) in order to identify more clearly any shifts occurring.

While the two distinctions just discussed did not prove fruitful that between superordinate and subordinate constructs did. However, the results of Studies 4 and 5 were not identical in this respect; in the latter no straightforward difference between superordinate and subordinate similarity emerged while in Study 4 superordinate similarity was found to be more strongly related to friendship than subordinate similarity. This difference may well have been due to the differences between the measures of superordinacy used. As already suggested similarity of superordinate core-role constructs may be particularly important for friendship because it indicates a common direction for the future. Research is needed to further clarify the importance of similarity at superordinate levels in this respect. Such research will need to be concerned with the meaning that such similarity has for the individuals involved - a point that will recur throughout this discussion.

As well as confirming and extending the prediction that friendship and similarity of personal construct content are related the research reported here has also shown that similar relationships exist between friendship and similarity of construct organisation (Studies 2, 3 and 5) and of construct structure (Study 5). Despite Duck's (1975b) reservations, then, it seems that filtering might also take place in terms of those characteristics and, thus, that the relevant information about others is available, or does become available, in the course of everyday interaction.

An important issue for the identification of filters and for the testing of the filter model emerges from the latter point. The existence of a relationship between friendship and some kind of similarity can only suggest that the latter acts as a filter, it does not show it directly. It may be that the finding is an artefact based on a correlation between the kind of similarity assessed and some other characteristic which does function as a filter. In order for a filter to be fully identified as such it would be necessary to show that it involved information which people, in general, try and find out about potential friends and, therefore, that it had implications, however weak and indirect, for the construction of friendship. Early filters would have the weakest links through their implications for characteristics that acted as later filters and which were more strongly linked with the friendship constructs. In other words the concern here would be with the meaning that different characteristics (types and levels of similarity) have and with the extent to which the constructions of these characteristics have superordinate implications for 'friendship'. Although vital for the filter model this sort of research has yet to be undertaken.

Turning now to the question of the filter sequence, only two of the present studies involved a 'time' dimension and they did not provide much support for the idea of a filter sequence. Thus, Study 1 failed to demonstrate that earlier similarity could predict later friendship while there were few differences in Study 5 between the longer-term relationships and the shorter-term relationships though there was one important exception here which showed that early friendships were characterised by 'asymmetrical' construct similarity while in later friendships 'symmetrical' similarity was more apparent. The

difference between the findings of Study 4 in which friends did share similar constructs after 18 months acquaintance and of Study 1 in which this was not the case in the same group after six months acquaintance cannot be taken as evidence for the existence of a filter sequence because different construct elicitation techniques were used on the two occasions. So, no strong evidence for a sequence of filters is to be found in the present research; however, none of the studies is ideally suited to demonstrating the existence of such a sequence and cannot compare, in this respect, with the power of the longitudinal studies of Duck (1973b experiment E; Duck and Craig 1978) which provide strong evidence for the model. The general failure of Study 5 in this connection may have been due to the relationship lengths chosen, as it will be argued below that most of the main filtering stages may be passed through in the first six months of acquaintance.

Since the studies do not demonstrate clearly that there is a sequence of filters they cannot, therefore, be of great help in specifying the actual order of filters. Two important findings, however, are that organisational similarity is not a particularly late filter (if anything, it seems to operate at about the same time as construct content similarity but, judging by the results of Study 5, does not continue to be important for so long) and that, more surprisingly, the same is true of structural similarity. As suggested in the previous chapter this last finding needs further investigation, preferably using a number of different measures of structural similarity.

One problem faced throughout these studies was that of predicting the order of filters; a problem for the filter model generally but particularly difficult in this case because fairly fine distinctions between different indices derived from the same repertory grids

were being attempted. If the filter model is to progress then grounds other than intuitive ones must be provided for such predictions. In order for this to occur orderings must be provided for how 'deep' different kinds of information about another are and for 'ease of access'. These two orderings are unlikely to be perfectly correlated (e.g. whether one squeezes the toothpaste tube at the end or in the middle is in some ways a very personal characteristic which might require a high degree of intimacy to exist before it is discovered by another - yet it is a characteristic which is unlikely to be taken as deeply revealing about one's personality¹) though there seems to be an assumption in the model that the two will be roughly similar. The depth of different kinds of information about others could be defined and investigated in terms of their implications, with some information (constructions) being superordinate to others i.e. as has already been suggested the meaning of different sorts of information needs to be investigated. The second ordering requires that research be done into the extent of people's knowledge about each other and the confidence with which they attribute different kinds of characteristics to others, at various stages of acquaintance.

Such a procedure would help to define a rough filter sequence but there would still be problems in specifying when in particular relationships certain filters might be expected to be acting. This is particularly the case given that the shifts in emphasis which the

¹ Though of course there are cases in which such behaviour is taken as evidence for such deep-seated characteristics as thoughtlessness or obsessionality.

model predicts are probably much finer than could be identified with current research techniques. For example, it has been the case in this research that structure and organisation have been discussed, to some extent, as though they existed independently of content. This is not the case, of course, and this means that any shift in emphasis in the filtering of construct content might also be expected to be paralleled by, possibly later, shifts in filtering of organisation and structure, e.g. if a shift from concern with general construct similarity to psychological construct similarity does take place, then it would be expected that a corresponding change would take place concerning the structural relationships between the constructs. The problem is one of trying to investigate a process with instruments which require the action to stop and may also divert the flow of future activity.

The final issue to be considered in this section is that of direction of causality. For the filter model it is vital that construct similarity plays a functional part in the development of friendship and is not simply a result of it. In the kind of correlational study performed here it is not possible to establish the direction of causality though longitudinal studies are of help in this respect. The one longitudinal study (Study 1) reported here was not ideal in that it did not include a measure of pre-acquaintance similarity but, in any case, it failed to show that earlier similarity could predict later friendship. When the same group of subjects were used in Study 4, however, a relationship between superordinate similarity and friendship was obtained. One interpretation of this would be that after 18 months acquaintance friendships were developing on the basis of such similarity while another would be that friends had developed

similar constructs as a result of their friendship. This last interpretation could be checked by comparing friendship choices after six months with the similarity scores of one year later. For subordinate similarity the relationship was not significant ($t = 0.730$, 17 d.f.); however, the relationship with superordinate similarity did approach significance ($t = 1.75$, 17 d.f., $p < .10$). This suggests that the convergence hypothesis does receive support and that the significant finding of Study 4 may have been at least partly due to the convergence. This, in itself, is not evidence against the filter model for, since superordinate similarity was not assessed at six months, it cannot be shown that early superordinate similarity was not predictive of later friendship. In fact since superordinate constructs are highly resistant to change (Hinkle 1965) it can be argued that such a relationship would have been obtained had the data been available.

One implication of this latter argument combined with the failure of Study 5, with one exception, to find any significant differences between short-term and longer-term friendships in the kinds of similarity exhibited is that by six months acquaintance filtering, at least in the friendships studied here, had already reached quite an advanced stage. It follows that future research which is aimed at identifying the main shifts of emphasis in the filtering process should concentrate on examining friendship development within this relatively early period.

The Filter Model and Personal Construct Theory

One of the main themes running through the above discussion was the need to explore the meaning which various sorts of information about others have for people and, in particular, the links between such information and the construction of friendship. In other words it was being suggested that people's own theories of relationships need to be tapped. This is a key aspect of a personal construct theory approach:

'the personal-construct psychologist ..., by his Fundamental Postulate, must seek validation of his understanding of other people by checking it against their personal construct systems.'

(Kelly 1955, p.178)

Thus, in that the filter model makes predictions about the nature of people's (in general) construct systems (e.g. by postulating implicative links between constructions of similarity, validation and friendship) it is necessary that these predictions be tested. There is a sense, of course, in which research such as that described here does this by testing predictions made on the basis of the assumptions about the structure of these constructions of friendship, but there are aspects of the model (e.g. the argument that the importance of similarity in friends is that it is validating) which, ideally, need to be tested more directly. It must be said, however, that getting at the relevant constructs will not be easy since many of the constructs linked with friendship do not appear to be easily verbalised.

One other important reason for exploring individuals' constructions of friendship is that it would allow for individual differences in the process of friendship choice and development to be examined and explained more clearly. For example, people seem to differ in the extent to which they desire similarity in their friends. From a Kellian point of view this can only be explained in terms of differences in construing. People also differ in the extent to which they can tolerate unpredictability in another. According to Kelly a 'person's tolerance of incompatibility is limited by the permeability and definition of certain superordinate aspects of his system' (1955, p.524). One final example follows from Heyman and Shaw's (1978) analysis of 'constructs of relationship'. They argue that individuals tend to adopt one of four 'alternative interpretive frameworks' for understanding dyadic relationships. They label these constructs reciprocity, exchange, egocentric and altercentric. They differ from each other in terms of whether both people are construed as having rights and obligations (reciprocity), or just one person is seen as having rights while the other has obligations (egocentric and altercentric), or whether each person is seen as acting purely out of self-interest (exchange). Though it is not part of Heyman and Shaw's argument it would seem likely that individuals with different superordinate constructs of relationship would approach friendship formation very differently and that, therefore, the bases of friendship might be correspondingly very different.

The basic argument here, then, is that if the filter model is to be both fully tested and extended the ideas of people themselves as to what is going on must be of prime consideration, though, importantly,

this is not to suggest that relationships can be fully explained by such means for relationships do seem to have emergent properties, to be the result of 'joint action' (Shotter 1980), which cannot be explained in terms of individuals' constructs alone. The adequacy of personal construct theory itself in dealing with social psychological issues of this sort is obviously in some doubt (cf. Holland 1977; Radley 1979) though the usefulness of the theory is being tested out by more and more social psychologists (cf. Stringer and Bannister 1979) and it may be, as Stringer (1979) has argued, that the Sociality Corollary will provide the basis for an expansion of the theory into areas it has yet to enter (though cf. Du Preez 1979, 1980; Gillard 1982).

The Social Context and the Filter Model

Returning now to the main focus of this thesis, the arguments about the adequacy of Kelly's theory in dealing with social psychological issues have been paralleled in the interpersonal attraction literature by calls for the social context of relationships to be paid greater attention by researchers (e.g. Andreyeva and Gozman 1981). Two aspects of this are the need to recognise that what happens in any one dyadic relationship will not be unaffected by the other relationships in which the participants are involved (La Gaipa 1981a) and that there may be differences, in the nature of their friendships, between people holding different positions within the wider society e.g. social class differences (Allan 1979).

The first of these points, the need to take account of social networks, can, it is thought, be seen in the findings of Study 1 and of Study 3. In the first of these a dyadic analysis revealed no

relationship between construct similarity and friendship while a group analysis, based on sociometric networks, did do so. The findings of Study 3 of a negative relationship between friendship and construct similarity led to the suggestion that the validation obtained from relationships outside the group studied was such that it enabled the group members to explore dissimilarity within the group itself (cf. the attraction paradigm studies of Stapert and Clore 1969, Griffit 1971 and Mascaró and Graves 1973 which showed that similarity was most attractive in an overall context of dissimilarity).

This explanation requires testing by, for example, comparing friendship formation within, say, groups of part-time students where the motivation for being a group member is primarily to do with work, obtaining qualifications etc. (as in the group in Study 3) and within groups in which the primary motivation is social. It might be expected that similarity might be more important in determining friendship in the latter than the former type of group. There would be exceptions to this, however (e.g. the person whose home life provides stability and a strong sense of identity but who desires some excitement), and more precise predictions could be made were individuals to be interviewed about their 'motivations'.

As an aside, it may be added that this possible explanation of a preference for dissimilarity is not seen as incompatible with that of Duck (1977a; 1979) who suggests that such a preference will only be displayed when the friend possesses some higher-order similarity. However, it does have the advantage of being considerably easier to test - the place, if any, of dissimilarity within the filter sequence is problematic notwithstanding the results of McCarthy and Duck (1976).

Duck (1975b) suggested that sex, age and social class differences, among others, in friendship should be investigated. While some work has been done on sex (Duck 1973a; 1975b) and age (Duck 1975b) differences there still remains much to do in shifting emphasis away from undergraduate students. The suggestion that female friendships are more intimate than male friendships has been made a number of times (e.g. Hill and Stull 1981) and the present research does provide some evidence for a greater depth of similarity in female friendships. This fits in with Duck's (1973a; 1975b) findings. Age was also shown to be important in Study 1; however, the results of Study 5 did not provide clear-cut age differences. While the age ranges involved in the latter study were restricted, both in the number of age categories and in the range of ages within each, and it does seem to be the case that there are common age-related changes in the bases and patterns of friendship in children and adolescents (e.g. La Gaipa 1981b; Duck 1975b) and in old-age (Chown 1981), the results suggest that, at least for the ages studied, the effects of age may be highly dependent on context. This is not to deny that there are common changes in adult life (Reisman 1981) but is to argue that there is enough variation in the meaning of being a particular age and in the expectations associated with it to mean that there is also substantial variation in friendship formation and development. The same argument could of course be put forward in the case of sex differences but probably sex roles, have been more clearly defined than have expectations associated with various ages, thus making context less important in this case.

That such issues are not peripheral but are important to the generality of the filter model is revealed in Allan's (1979) work. He found social class differences in terms of the functions of friends

nd kin. The functions fulfilled by working class kin were those fulfilled by the friends of the middle-class people in his sample. He also found that working class males had 'mates' rather than 'friends'. From the present perspective this raises the question of whether mates are chosen on the same bases as friends or whether rather different processes are involved. Only when a wider range of subjects is used will such questions be answered - in the present research only Study 3 and Study 5 did not use a group of undergraduates as subjects and, while both studies do provide support for the generality of the filter model, there was a basic restriction to middle-class subjects.

Summary of Findings and Suggestions for Future Research.

The research reported here has confirmed the existence of a relationship between personal construct content similarity and friendship, but has also shown that similarity of construct organisation and structure may also be important. Content similarity was assessed in two ways and it was found that different patterns of results emerged using the two measures: it was suggested that the measures tapped different levels of similarity. Similarity of superordinate and/or core-role constructs was found to be particularly strongly related to friendship in one study, while in another long-standing friends were found to exhibit greater agreement as to the importance of shared constructs. In one study construct dissimilarity was found to be associated with friendship. It was suggested that the social networks of the subjects needed to be considered in order to

understand this finding. The importance of this was also demonstrated in the first study in which a group analysis usefully supplemented the dyadic analysis. Age and sex differences were also investigated. A number of sex differences emerged which supported the view that female friendships reach greater 'depths' than male friendships. It was argued that the meaning of age varied between social contexts and so, therefore, did its effects on friendship development.

A number of suggestions were made for further research. Further studies of the sort reported here, particularly longitudinal studies, are needed to investigate further the kinds of similarity associated with friendship and the stages of acquaintance at which these associations exist. In particular the findings reported here relating to similarity of construct content, as assessed in terms of construct categories, to similarity of construct structure and to the importance of superordinate similarity all need to be extended to enable a clearer picture of the changes in emphasis during friendship development to emerge. Such research needs to be carried out on a wide-range of subject populations in a variety of social situations with the aims of testing the generality of the model and of investigating the effects of the social context on the processes of friendship formation and development.

In order for a better understanding of the filter sequence and for a more adequate testing of some aspects of the model, this kind of research needs to be carried out in conjunction with research which explores people's constructions of friendship, which looks at the meaning that different kinds of information about others has and

particularly its implications for friendship, which uses the information so gained to make predictions about the order of filters and about individual differences and which, finally, relates all this to societal norms and expectations. There is much to be done!

APPENDICES

1. BLANK REPERTORY GRID SHEET (STUDY 1)

1 2 3 4 5

HOW SIMILAR

HOW DIFFERENT

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

2. INSTRUCTIONS AND GRID FOR THE MEASUREMENT OF CC (Study 1)

This second task is very similar to the one you have just finished. However the grid is only 8 x 8 and the dimensions you are to use are specified i.e. you have only to do the ratings.

8 role titles are given. Fit a different individual to each role title and write their names or initials in the appropriate space above each column in the grid, making sure that the number of the role title of any individual corresponds with the number of the column in which his or her name is put.

When you have done this please rate each of the 8 people on the 8 scales provided. This time, instead of a 5-point scale, a 6-point scale with no mid-point is used. For each individual decide whether the left or right hand term applies (indicated by L or R), then decide to what extent the term applies: 3 indicating greatest applicability and 1 indicating less applicability.

e.g. if in the first row you decide that a particular person is best described as "outgoing" rather than "shy" then, in the appropriate square, you would put "L" followed by 1, 2, or 3 depending on the extent to which the person can be described as outgoing. If the individual is best described as "shy" then R1, R2 or R3 would be appropriate depending on how shy you think the person is.

Role Title List

1. Closest friend of the same sex as yourself.
2. Person of the opposite sex whom you find hard to like.
3. A friend you admire of the same sex as yourself.
4. Closest friend of opposite sex (or spouse).
5. Person of same sex with whom you feel most uncomfortable.
6. A friend you admire of the opposite sex.
7. Person of the same sex whom you find hard to like.
8. Person of the opposite sex with whom you feel most uncomfortable.

	L3-----L2-----L1-----R1-----R2-----R3								
	1	2	3	4	5	6	7	8	
OUTGOING									SHY
MALADJUSTED									ADJUSTED
INDECISIVE									DECISIVE
CALM									EXCITABLE
SELF-ABSORBED									INTERESTED IN OTHERS
CHEERFUL									ILL-HUMoured
RESPONSIBLE									IRRESPONSIBLE
INCONSIDERATE									CONSIDERATE

3. AN EXAMPLE OF A RATING SHEET (STUDY 1)

DON'T SAY MUCH	-5	-4	-3	-2	-1	0	1	2	3	4	5	ALWAYS TALKING
ATHLETIC	-5	-4	-3	-2	-1	0	1	2	3	4	5	SEMI-ATHLETIC
MORE LIKELY TO SHOW EMOTIONS.	-5	-4	-3	-2	-1	0	1	2	3	4	5	LESS LIKELY TO SHOW EMOTIONS
ROMANTIC; SUSCEPTIBLE TO DEPRESSION	-5	-4	-3	-2	-1	0	1	2	3	4	5	
LARGE CIRCLE OF "INFLUENCE" ON FRIENDS. LEADER	-5	-4	-3	-2	-1	0	1	2	3	4	5	FOLLOWER
SELF-CONFIDENT	-5	-4	-3	-2	-1	0	1	2	3	4	5	SHY
OPTIMISTIC	-5	-4	-3	-2	-1	0	1	2	3	4	5	WORRIER
ARTISTIC	-5	-4	-3	-2	-1	0	1	2	3	4	5	SCIENTIST; MECHANICALLY MIND
IDiotic SENSE OF HUMOUR	-5	-4	-3	-2	-1	0	1	2	3	4	5	CYNICAL SENSE OF HUMOUR
IMPULSIVE	-5	-4	-3	-2	-1	0	1	2	3	4	5	DELIBERATE
NERVY	-5	-4	-3	-2	-1	0	1	2	3	4	5	CALM
ABILITY TO GO OUT & ACHIEVE THINGS	-5	-4	-3	-2	-1	0	1	2	3	4	5	SETTLED ROUTINE
UNKNOWN (VERBALLY)	-5	-4	-3	-2	-1	0	1	2	3	4	5	POLITE
THIN	-5	-4	-3	-2	-1	0	1	2	3	4	5	FAT
COMPASSIONATE	-5	-4	-3	-2	-1	0	1	2	3	4	5	UNCARING
DON'T TAKE RISKS	-5	-4	-3	-2	-1	0	1	2	3	4	5	HAPPY TO TAKE RISKS

4. INDIVIDUAL SUBJECTS' CONSTRUCT ORGANISATION SCORES (STUDY 1)

<u>S.No.</u>	<u>CC</u>	<u>CC%</u>	<u>RC%</u>
1	71	61.76	47.43
2	72	75.55	37.99
3	52	42.62	41.67
4	70	52.54	35.78
5	-	-	36.43
6	62	64.62	37.58
7	64	54.25	39.61
8	49	59.93	51.90
9	68	64.58	65.65
10	55	65.59	56.90
11	60	72.62	39.03
12	61	45.05	36.72
13	56	63.86	62.87
14	68	47.19	43.59
15	71	69.71	39.83
16	78	63.43	28.99
17	64	68.12	30.30
18	51	46.04	38.55
19	38	46.40	31.86
20	57	54.34	33.02
21	67	44.99	48.92
22	50	59.51	36.98
23	44	46.62	36.48
24	60	41.54	39.46
25	66	39.82	48.58

5. THE RELATIONSHIP BETWEEN SIMILARITY OF CONSTRUCT ORGANISATION
(6 MONTHS ACQUAINTANCE) AND FRIENDSHIP (18 MONTHS ACQUAINTANCE)
FOR THREE MEASURES OF CONSTRUCT ORGANISATION AND SPLIT BY SEX OF
CHOOSEER AND SEX OF CHOSEN. (STUDY 1)






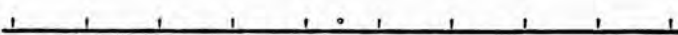


(a) CC:	<u>S</u>	<u>Z</u>
M-M	4	1.50
M-F	2	< 1
F-M	-7	1.76 p < .10
F-F	9	1.42

(b) CC%:	<u>S</u>	<u>Z</u>
M-M	4	1.50
M-F	0	-
F-M	-2	< 1
F-F	-5	< 1

(c) RC%	<u>S</u>	<u>Z</u>
M-M	-5	1.79 p < .10
M-F	5	1.29
F-M	-4	< 1
F - F	-5	< 1









SELF CONFIDENT

LACK OF CONFIDENCE

PERSON 1	
PERSON 2	
PERSON 3	
PERSON 4	
PERSON 5	
PERSON 6	
PERSON 7	
PERSON 8	

IDEALIST

REALIST

PERSON 1	
PERSON 2	
PERSON 3	
PERSON 4	
PERSON 5	
PERSON 6	
PERSON 7	
PERSON 8	

7. PERCENTAGE OF JUDGEMENTS IN EACH CONSTRUCT CATEGORY (STUDY 5)

	<u>Category</u>	<u>%</u>
1.	Social Interaction	13.83
2.	Forcefulness	10.62
3.	Organisation	3.94
4.	Self-sufficiency	4.14
5.	Status	4.31
6.	Factual Description	10.39
7.	Intellective	4.02
8.	Self-reference	1.97
9.	Imagination	4.60
10.	Open/Closed to Alternatives	5.03
11.	Sexual	1.13
12.	Morality	1.50
13.	External Appearance	1.50
14.	Emotional Arousal	6.66
16.	Egoism	5.27
17.	Tenderness	7.44
18.	Time Orientation	0.75
19.	Involvement	4.37
22.	Humour	1.59
	Non-classifiable (? and NC)	3.67

8. MEAN NUMBER OF SHARED CONSTRUCTS (SIX-WAY INTERACTION: STUDY 5)

SEX	AGE	RELATIONSHIP LENGTH	PIVOT CONSTRUCT IMPORTANCE	OTHER CONSTRUCT IMPORTANCE	RELATIONSHIP	
					FRIEND	ACQ.
M	Y	S	IMP	IMP	1.00	1.33
M	Y	S	IMP	LESS IMP	1.00	1.00
M	Y	S	LESS IMP	IMP	1.33	0.67
M	Y	S	LESS IMP	LESS IMP	0.67	0.33
M	Y	L	IMP	IMP	1.00	0.33
M	Y	L	IMP	LESS IMP	0.33	0.67
M	Y	L	LESS IMP	IMP	1.00	1.00
M	Y	L	LESS IMP	LESS IMP	0.67	0.33
M	O	S	IMP	IMP	1.00	1.33
M	O	s	IMP	LESS IMP	0.33	0.00
M	O	S	LESS IMP	IMP	0.33	0.00
M	O	S	LESS IMP	LESS IMP	0.67	1.00
M	O	L	IMP	IMP	0.67	0.33
M	O	L	IMP	LESS IMP	1.00	0.00
M	O	L	LESS IMP	IMP	1.00	0.33
M	O	L	LESS IMP	LESS IMP	1.00	0.67
F	Y	S	IMP	IMP	1.67	0.67
F	Y	S	IMP	LESS IMP	1.00	0.00
F	Y	S	LESS IMP	IMP	0.33	0.33
F	Y	S	LESS IMP	LESS IMP	0.67	0.67
F	Y	L	IMP	IMP	1.33	0.67
F	Y	L	IMP	LESS IMP	0.67	0.00
F	Y	L	LESS IMP	IMP	1.33	0.67
F	Y	L	LESS IMP	LESS IMP	1.00	0.00
F	O	S	IMP	IMP	1.33	1.00
F	O	S	IMP	LESS IMP	1.33	0.67
F	O	S	LESS IMP	IMP	0.67	0.33
F	O	S	LESS IMP	LESS IMP	0.67	1.33
F	O	L	IMP	IMP	2.00	0.33
F	O	L	IMP	LESS IMP	0.67	1.00
F	O	L	LESS IMP	IMP	0.67	1.33
F	O	L	LESS IMP	LESS IMP	1.67	0.33

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